

DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL
Division of Water
Groundwater Discharges Section
Statutory Authority: 7 Delaware Code, Chapter 60 (7 **Del.C.** Ch. 60)
7 DE Admin. Code 7102

PROPOSED

REGISTER NOTICE
SAN #2012-21

7102 Regulations Governing Underground Injection Control

ADOPTED: August 15, 1983
EFFECTIVE: August 15, 1983

The following Parts and Titles resemble the Code of Federal Regulations (CFR) numbering system:

Part 147 - State UIC Program - Sections 1.0-2.0

Part 124 - General Program Requirements - Sections 3.0-19.0

Part 144 - General Provisions - Sections 20.0-54.0

Part 146 - UIC Program: Criteria and Standards - Sections 55.0-70.0

1.0 State-administered program

1.1 The Underground Injection Control (UIC) program for all classes of injection wells in the State of Delaware is administered by the Delaware Department of Natural Resources and Environmental Control (DNREC) and approved by the United States Environmental Protection Agency (EPA) pursuant to the Safe Drinking Water Act (SDWA). Notice of this approval was published in the Federal Register on April 5, 1984 (49 FR 13525); the effective date of this program was May 7, 1984. The UIC Regulations and the UIC permit program are adopted under the authority of Chapter 60 of Title 7 of the Delaware Code.

1.2 The Department may delegate any of the Department's powers, duties or functions to a director of a division, in accordance with 29 **Del.C.** §8003(6).

1.3 State Administered Underground Injection Control Program. Authority: Delaware Environmental Protection Act, 7 **Del.C.** Ch. 60.

1.3.1 Authority. The Permit Program is authorized by 7 **Del.C.** §6003 and §6010.

2.0 Severability of provisions

The provisions in these Regulations and the various applications thereof are distinct and severable. If any provision of these Regulations or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect the validity of other provisions or the application of those other provisions to other persons or circumstances which can be given effect without the invalid provision or application.

Part 124 - General Program Requirements - Sections 3.0-19.0

3.0 Purpose and scope

3.1 Part 124 (Sections 3.0-19.0) contains DNREC procedures for issuing, modifying, revoking and reissuing, or terminating all UIC permits. UIC Rule Authorization letters are not "permits."

3.2 This Part contains general procedural requirements applicable to all permit programs covered by these regulations. This Part describes the steps the Department will follow in receiving and reviewing permit applications, preparing draft permits, issuing public notices, inviting public comment, and holding public hearings on draft permits. This Part also sets out procedures for assembling an administrative record, responding to comments, issuing a final permit decision, and allowing for administrative appeals of final permit decisions.

3.3 This Part offers an opportunity for public hearings (see 7 **Del.C.** §6006).

3.4 This Part is designed to allow permits for a given facility under two or more of the listed programs to be processed separately or together at the discretion of the Department. This allows DNREC to combine the processing of permits when, in the Department's judgment, combined processing is appropriate and not necessarily in all cases. The Department may consolidate permit processing when the permit applications are submitted, when draft permits are prepared, or when final permit decisions are issued. This part also allows consolidated permits to be subject to a single public hearing under 7 **Del.C.** §6006, Public Hearings. Permit applicants may request that their applications should be consolidated in any given case, but such decision remains within the Department's discretion.

3.5 To coordinate decision-making when different permits will be issued by EPA and DNREC programs, this part allows applications to be jointly processed, joint comment periods and hearings to be held, and final permits to be issued on a cooperative basis whenever EPA and DNREC agree to take such steps in general or in individual cases. These joint processing agreements may be provided in a future Memorandum of Agreement.

4.0 Acronyms and Definitions:

The following words and phrases, when used in these Regulations, have the meaning ascribed to them as follows, unless the text clearly indicates otherwise:

Acronyms:

ASR means Aquifer Storage and Recovery

CFR means the Code of Federal Regulations

CWA means the Clean Water Act

DEPA means the Delaware Environmental Protection Act

DNREC means the State of Delaware Department of Natural Resources and Environmental Control

DW means the Division of Water

EAB means the Environmental Appeals Board established by 7 **Del.C.** §6007

EPA means the United States Environmental Protection Agency

GWDS means the Groundwater Discharges Section

NAICS means North American Industrial Classification System

NPDES means National Pollution Discharge Elimination System
OWTDS means an On-Site Wastewater Treatment and Disposal System
POTW means Publicly Owned Treatment Works
RCRA means the Resource Conservation and Recovery Act of 1976
RIB means Rapid Infiltration Basin
SDWA means the Safe Drinking Water Act
SIC means Standard Industrial Classification
TMDL means Total Maximum Daily Load
UIC means Underground Injection Control
USDW means Underground Source(s) of Drinking Water

Definitions:

"Abandoned well" means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.

"Act" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act Amendments of 1972).

"Administrator" means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

"Annulus" refers to the space between the well casing and the wall of the bore hole; the space between concentric strings of casing; the space between casing and tubing.

"Applicant" means the owner or legally authorized agent of the owner as evidenced by sufficient written documentation.

"Application" means the DNREC standard forms for applying for a permit, including any additions, revisions or modifications to the forms.

"Appropriate Act and Regulations" means the Clean Water Act (CWA); the Solid Waste Disposal Act, as amended by the Resource Conservation Recovery Act (RCRA); or Safe Drinking Water Act (SDWA), whichever is applicable; and applicable regulations promulgated under those statutes. In the case of an "Approved State Program," "Appropriate Act and Regulations" includes program requirements.

"Approved program or approved State" means a State or interstate program which has been approved or authorized by EPA.

"Approved State Program" means a UIC program administered by the State or Indian Tribe that has been approved by EPA according to SDWA Sections 1422 and 1425.

"Aquifer" means a geological "formation", group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

"Aquifer Storage and Recovery (well)" refers to a well that is utilized for the purpose of storing potable water in an aquifer; potable water is injected into the aquifer and withdrawn at a later date.

"Area of review (AoR)" refers to the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and displaced fluids, and is based on available site characterization, monitoring, and operational data.

"Authorization by Rule" refers to the operation of a category of injection wells operated in compliance with these Regulations, without the need for a permit or Rule Authorization letter; and this activity does not endanger underground sources of drinking water and the activity complies with other UIC program requirements.

"Automatic shut-off device" means a valve which closes when a pre-determined pressure or flow value is exceeded. Shut-off devices in injection wells can automatically shut down injection activities preventing an excursion outside of the permitted values.

"Ball valve" means a valve consisting of a hole drilled through a ball placed in between two seals. The valve is closed when the ball is rotated in the seals so the flow path no longer aligns and is blocked.

"Biosphere" refers to the part of the Earth's crust, waters, and atmosphere that supports life.

"Brine" refers to a strong saline solution; also refers to the discharge fluid generated by a water treatment process.

"Buoyancy" means the upward force on one phase (e.g., a fluid) produced by the surrounding fluid (e.g., a liquid or a gas) in which it is fully or partially immersed, caused by differences in pressure or density.

"Capillary force" refers to the adhesive force that holds a fluid in a capillary or a pore space. Capillary force is a function of the properties of the fluid, and surface and dimensions of the space. If the attraction between the fluid and surface is greater than the interaction of fluid molecules, the fluid will be held in place.

"Caprock" See confining zone.

"Carbon dioxide plume" refers to the extent underground, in three dimensions, of an injected carbon dioxide stream.

"Carbon dioxide (CO₂) stream" refers to the carbon dioxide that has been captured from an emission source (e.g., a power plant), plus incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve the injection process. This subpart does not apply to any carbon dioxide stream that meets the definition of a hazardous waste under 40 CFR Part 261.

"Casing" means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent water, gas, or other fluid from entering or leaving the hole. The two types of casing in most injection wells are (1) surface casing, the outermost casing that extends from the surface to the base of the lowermost USDW and (2) long-string casing, which extends from the surface to or through the injection zone.

"Catastrophic collapse" means the sudden or utter failure of overlying "strata" caused by removal of underlying materials.

"Cement" refers to the material used to support and seal the well casing to the rock formations exposed in the borehole. Cement also protects the casing from corrosion and prevents movement of injectate up the borehole. The composition of the cement may vary based on the well type and purpose; cement may contain latex, mineral blends, or epoxy.

"Cementing" means the operation whereby a Portland cement slurry is pumped into a drilled hole and forced behind the casing.

"Cesspool" means a drywell that receives untreated sanitary waste containing human excreta, and which sometimes has an open bottom and perforated sides; or a covered pit with a porous lining into

which wastewater is discharged and allowed to seep or leach into the surrounding soils with or without an absorption facility.

"Class (I, II, III, IV, V, VI) Well" see Section 58.0, Classification of Injection Wells

"Class V Storm Water Drainage Well" refers to subsurface infiltration wells or pipes to manage surface water runoff (rainwater or snow melt); Storm water infiltration systems with piping to enhance infiltration capabilities meet the UIC definition of a Class V well.

"Code of Federal Regulations" (CFR) is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the U.S. Federal Government.

"Commercial Facility" refers to any structure or building, or any portion thereof, other than a residential dwelling.

"Community System" means an on-site wastewater treatment and disposal system which serves more than three (3) lots, parcels, condominium units or units of a planned development.

"Confined Aquifer" refers to an aquifer bounded above and below by impermeable beds or by beds of distinctly lower permeability than that of the aquifer itself and containing Groundwater. An aquifer containing Groundwater which is at a pressure greater than atmospheric pressure is one in which water in a well will rise to a level above the top of the aquifer.

"Confining bed" means a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

"Confining Layer" means a body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers.

"Confining zone" means a geological formation, group of formations, or part of a formation that is capable of limiting fluid movement above an injection zone.

"Contaminant" means any physical, chemical, biological, or radiological substance or matter in water.

"Conventional mine" means an open pit or underground excavation for the production of minerals.

"Corrective action" means the use of Director approved methods to ensure that wells within the area of review do not serve as conduits for the movement of fluids into USDWs.

"Corrosive" means having the ability to wear away a material by chemical action.

"CWA" means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act. Amendments of 1972) Pub.L. 92-500, as amended by Pub.L. 95-217 and Pub.L. 95-576: 33 U.S.C. §1251 et seq.

"Delaware Environmental Protection Act" (DEPA) means the State of Delaware Environmental Protection Act codified in Chapter 60 of Title 7 of the Delaware Code.

"Department" means the Department of Natural Resources and Environmental Control of the State of Delaware (DNREC) established by Chapter 80 of Title 29 of the Delaware Code and exercising the authority delegated thereby and by Chapter 60 of Title 7 of the Delaware Code.

"Department of Natural Resources and Environmental Control" (DNREC) means the State of Delaware Department of Natural Resources and Environmental Control.

"Dip" means the angle between a planar feature, such as a sedimentary bed or a fault, and the horizontal plane.

"Director" means the Director of DNREC's Division of Water.

"Disposal well" means a well used for the disposal of waste into a subsurface stratum.

"Domestic Effluent" means treated domestic/sanitary wastewater.

"Domestic wastewater" means the liquid and water-borne human and household type wastes derived from residential, industrial, institutional, or commercial sources.

"Down Gradient" refers to an area that has a lower potentiometric surface (hydraulic head) than a comparative reference point.

"Draft permit" means a prepared document indicating the Department's tentative decision to issue or deny, modify, revoke and reissue, terminate, or reissue a "permit." A notice of intent to terminate a permit and a notice of intent to deny a permit are types of "draft permits." A denial of a request for modification, revocation and reissuance, or termination, is not a "draft permit." A "proposed permit" is not a "draft permit."

"Drilling mud" means a heavy suspension used in drilling an "injection well," introduced down the drill pipe and through the drill bit.

"Drywell" means a well, other than an improved sinkhole or subsurface fluid distribution system, generally completed above the water table so that its bottom and sides are typically dry except when receiving fluids.

"Ductility" refers to the ability of a material to sustain stress until it fractures.

"DW" means the Division of Water.

"Effective date of a UIC program" means the date that a State UIC program is approved or established by the Department.

"Emergency permit" means a UIC "permit" issued in accordance with Section 35.0 of these regulations.

"Enhanced Coal Bed Methane (ECBM) recovery" means the process of injecting a gas (e.g., CO₂) into coal, where it is adsorbed to the coal surface and methane is released. The methane can be captured and produced for economic purposes; when CO₂ is injected, it adsorbs to the surface of the coal, where it remains trapped or sequestered.

"Enhanced Oil or Gas Recovery (EOR/EGR)" refers typically, the process of injecting a fluid (e.g., water, brine, or CO₂) into an oil or gas bearing formation to recover residual oil or natural gas. The injected fluid thins (decreases the viscosity) and/or displaces extractable oil and gas, which is then available for recovery. This is also used for secondary or tertiary recovery.

"Environmental Appeals Board" means the Environmental Appeals Board established by 7 Del.C. §6007.

"Environmental Protection Agency" (EPA) means the United States Environmental Protection Agency.

"Exempted aquifer" means an "aquifer" or its portion that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to the procedures in Section 57.0 of these Regulations.

"Existing injection well" means an "injection well" other than a "new injection well."

"Experimental technology" means a technology which has not been proven feasible under the conditions in which it is being tested.

"Exploratory pilot hole" means a hole drilled for the purpose of obtaining subsurface information or as a guide for the drill bit to follow when drilling the final hole.

"Exploratory well" means a cased well drilled in an area in which there is limited hydrologic and geologic data, to obtain sufficient data to determine the feasibility of using an injection well at the site.

"Facility" means any building, any structure, any complex of buildings or structures, or any process, production equipment or machinery, which makes it possible for an activity to be conducted.

"Fact Sheet" refers to a document that briefly sets forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit.

"Fault" means a surface or zone of rock fracture along which there has been displacement.

"Flapper valve" refers to a valve consisting of a hinged flapper that seals the valve orifice. In Class VI wells, flapper valves can engage to shut off the flow of the CO₂ when acceptable operating parameters are exceeded.

"Flow rate" means the volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine, or which passes along a conduit or channel.

"Fluid" means material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.

"Formation" means a body of consolidated or unconsolidated rock characterized by a degree of lithologic homogeneity which is prevailing, but not necessarily, tabular and is able to be mapped on the earth's surface or traceable in the subsurface.

"Formation fluid" means "fluid" present in a "formation" under natural conditions as opposed to introduced fluids, such as "drilling mud."

"Generator" means any person, by site location, whose act or process produces waste.

"Geological formation" refers to a layer of rock that is made up of a certain type of rock or a combination of types.

"Geologic sequestration (GS)" refers to the long-term containment of a gaseous, liquid or supercritical carbon dioxide stream in subsurface geologic formations. This term does not apply to CO₂ capture or transport.

"Geologic sequestration project" means, for the purpose of this regulation, an injection well or wells used to emplace a carbon dioxide stream beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to these requirements; or, wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class II EOR/EGR aquifer exemption pursuant to these requirements. It includes the subsurface three-dimensional extent of the carbon dioxide plume, associated area of elevated pressure, and displaced fluids, as well as the surface area above that delineated region.

"Geophysical surveys" means the use of geophysical techniques (e.g., seismic, electrical, gravity, or electromagnetic surveys) to characterize subsurface rock formations.

"Groundwater" means any water naturally found under the surface of the earth or water below the land surface in a zone of saturation.

"GWDS" means the Groundwater Discharges Section of the Division of Water.

"Hazardous waste" means a hazardous waste as defined in the State of Delaware Regulations Governing Hazardous Waste.

"Hazardous Waste Management facility" (HWM facility) means all contiguous land, and structures, other appurtenances, and improvements on the land used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (for example, one or more landfills, surface impoundments, or combination of them).

"HWM facility" means "Hazardous Waste Management facility."

"Improved sinkhole" means a naturally occurring karst depression or other natural crevice found in volcanic terrain and other geologic settings which have been modified by man for the purpose of directing and emplacing fluids into the subsurface.

"Industrial Waste" means any water-borne liquid, gaseous, solid or other waste substance or a combination thereof resulting from any process of industry, manufacturing, trade or business, or from the development of any agricultural or natural resource.

"Injectate" refers to the fluid that is being discharged or injected; this is also known as the CO₂ stream.

"Injection interval" means that part of the injection zone in which the well is screened, or in which the waste is otherwise directly emplaced.

"Injection point" means a well or other subsurface injection system, designed for the emplacement of a fluid or fluids into the subsurface.

"Injection well" means a "well" into which "fluids" are being injected.

"Injection zone" means a geological "formation," group of formations, or part of a formation receiving injectate through a "well."

"Interstate agency" means an agency of two or more States established by or under an agreement or compact approved by the United States Congress, or any other agency of two or more States having substantial powers or duties pertaining to the control of pollution as determined and approved by the Department under the "appropriate Act and regulations."

"Large-capacity cesspool" refers to a cesspool located at a non-residential establishment or a cesspool having the capability of serving at least 20 persons per day.

"Large System" refers to any On-site Wastewater Treatment and Disposal System (OWTDS) with a projected wastewater design flow rate equal to or greater than 2,500 gallons per day.

"Lithology" means the description of rocks on the basis of their physical and chemical characteristics.

"Major Class V injection well" refers to any Class V injection well for which a UIC permit is required that injects any of the following: more than 25,000 gallons of fluid per day directly into a USDW; injects domestic or industrial wastewater directly into a USDW; injects cooling water with additives; is an experimental injection well; is used as a salt water intrusion barrier; or is used to inject fluids into a confined aquifer.

"Major facility" means any RCRA, UIC, NPDES, or 404 "facility or activity" classified as such by the Department.

"Mechanical integrity (MI)" means the absence of significant leakage within the injection tubing, casing, or packer (known as internal mechanical integrity), or outside of the casing (known as external mechanical integrity).

"Mechanical Integrity Test" refers to a test performed on a well to confirm that a well maintains internal and external mechanical integrity. MITs are a means of measuring the adequacy of the construction of an injection well and a way to detect problems within the well system.

"Minor Modification" means modifications as described in Section 42.0 of these Regulations.

"Model" means a representation or simulation of a phenomenon or process that is difficult to observe directly or that occurs over long time frames. Models that support GS can predict the flow of CO₂ within the subsurface, accounting for the properties and fluid content of the subsurface formations and the effects of injection parameters.

"Motor Vehicle Waste Disposal Well" means an injection well or disposal system that receives or has received fluids from engine repair or maintenance activities, such as an auto body repair shop, automotive repair shop, new and used car dealership, specialty repair shop (e.g., transmission and muffler repair shop), or any facility that does any engine maintenance/repair work.

"Municipality" means a city, town, county, district, association, or other political subdivision created by or pursuant to State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or a designated and approved management agency.

"NAICS" means North American Industrial Classification System [a 6-digit code which represents the facility's industrial activity or activities].

"New Injection Well" means an injection point (via well or subsurface injection activity) which began after the promulgation of the UIC Regulations on May 7, 1984; or an injection point which has never previously received written approval from the Department to inject a fluid.

"NPDES" means National Pollution Discharge Elimination System.

"On-Site Wastewater Treatment and Disposal System" (OWTDS) means a conventional or alternative wastewater treatment and disposal system installed or proposed to be installed on land of the owner of the OWTDS or on other land on which the owner of the OWTDS has the legal right to install the system.

Operational Testing" refers to a period, lasting up to two years under the construction permit, of full-scale injection operation for the purposes of long term testing, to determine potential fluid migration prior to issuing the operational permit.

"Operator" means owner or operator of any "facility or activity" subject to regulation under the RCRA, UIC, NPDES, or 404 programs.

"Owner" refers to person(s) who has a vested legal or equitable title to real or personal property, including an injection system.

"Packer" means a device lowered into a well to produce a fluid-tight seal within the casing. Also, a mechanical device that seals the outside of the tubing to the inside of the long string casing, isolating an annular space.

"Percolation rate" means the rate of water movement through a soil. Percolation rate is usually measured and assigned on the basis of elapsed time per unit volumetric water level drop. The most commonly used unit for expressing percolation rate is minutes per inch (MPI).

"Permeability" refers the property of a soil horizon that enables the soil to transmit gases, liquid, or other substances.

"Permit" means a written approval, license, or equivalent control document issued by the Department, to implement the requirements of these Regulations, which has been publicly advertised.

"Permittee" refers to any individual, partnership, corporation, association, institution, cooperative enterprise, agency, municipality, commission, political subdivision, or duly established entity to which a permit is issued by the Department.

"Person" means any individual, trust, firm, joint stock company, federal agency, partnership, corporation (including a government corporation), association, state, municipality, and commission, political subdivision of a state or any interstate body.

"Pinch-out" means a situation where a formation thins to zero thickness.

"Plugging" means the act or process of stopping the flow of water, oil, or gas into or out of a formation through a borehole or well penetrating that formation.

"Plugging record" means a systematic listing of permanent or temporary abandonment of water, oil, gas, test, exploration and waste injection wells, and may contain a well log, description of amounts and types of plugging material used, the method employed for plugging, a description of formations which are sealed and a graphic log of the well showing formation location, formation thickness, and location of plugging structures.

"Point of injection" means the last accessible sampling point prior to waste fluids being released into the subsurface environment through an injection well. For example, the point of injection of a Class V septic system might be the distribution box--the last accessible sampling point before the waste fluids drain into the underlying soils. For a dry well, it is likely to be the well bore itself.

"Pollutant" means any substance, radioactive material, or waste heat which causes or contributes to, or may cause or contribute to, pollution.

"Pore space" refers to the open spaces in rock or soil. These are filled with water or other fluids such as brine (i.e., salty fluid). CO₂ injected into the subsurface can displace pre-existing fluids to occupy some of the pore spaces of the rocks in the injection zone.

"Post-injection site care (PISC)" means the appropriate monitoring and other actions (including corrective action) needed following cessation of injection to ensure that USDWs are not endangered.

"Pressure" means the total load or force per unit area acting on a surface.

"Pressure front" means the zone of elevated pressure that is created by the injection of carbon dioxide into the subsurface. For GS projects, the pressure front of a CO₂ plume refers to the zone where there is a pressure differential sufficient to cause the movement of injected fluids or formation fluids into a USDW.

"Project" means a group of wells in a single operation.

"Public Health Hazard" means a condition whereby there are sufficient types and amounts of biological, chemical, or physical, including radiological, agents relating to water or sewage which are likely to cause human illness, disorders, or disability. These include, but are not limited to, pathogens, viruses, bacteria, parasites, toxic chemicals, and radioactive isotopes.

"Publicly owned treatment works" (POTW) means any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a "State" or "municipality." This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.

"Radioactive waste" means any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR Part 20, Appendix B.

"Rapid Infiltration Basin" (RIB) means a permeable earthen basin designed and operated to dispense treated domestic wastewater to the surficial aquifer.

"RCRA" means the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Pub.L. 94-580, as amended by Pub.L. 95-609, 42 U.S.C. 6901 et. seq.).

"Regional Administrator" means the Regional Administrator of the appropriate Regional Office of the Environmental Protection Agency or the authorized representative of the Regional Administrator.

"Reverse Osmosis" refers to the water treatment process by which water passes through a porous membrane in the direction opposite to that for natural osmosis when subjected to a hydrostatic pressure greater than the osmotic pressure.

"Rule Authorization letter" refers to a document approving a Class V injection activity that is not required to obtain a UIC permit, since the activity does not endanger underground sources of drinking water, and the injection activity complies with other UIC program requirements.

"Saline formations" means the subsurface geographically extensive sedimentary rock layers saturated with waters or brines that have a high total dissolved solids (TDS) content (i.e., over 10,000 mg/L TDS).

"Sanitary waste" means liquid or solid wastes originating solely from humans and human activities, such as wastes collected from toilets, showers, wash basins, sinks used for cleaning domestic areas, sinks used for food preparation, clothes washing operations, and sinks or washing machines where food and beverage serving dishes, glasses, and utensils are cleaned. Sources of these wastes may include single or multiple residences, hotels and motels, restaurants, bunkhouses, schools, ranger stations, crew quarters, guard stations, campgrounds, picnic grounds, day-use recreation areas, other commercial facilities, and industrial facilities provided the waste is not mixed with industrial waste.

"Schedule of compliance" means a schedule of remedial measures included in a "permit," including an enforceable sequence of interim requirements (for example, actions, operations, or milestone events) leading to compliance with the "appropriate Act and regulations."

"SDWA" means the Safe Drinking Water Act (Pub.L. 95-523, as amended by Pub.L. 95-1900; 42 U.S.C. §300f et seq.).

"Secretary" means the Secretary of the Department of Natural Resources and Environmental Control or the Secretary's duly authorized designee.

"Seepage Pit" means a covered pit with a porous lining into which wastewater is discharged and allowed to seep or leach into the surrounding soil and is preceded by a septic tank.

"Septic system" see On-Site Wastewater Treatment and Disposal System.

"SIC" means Standard Industrial Classification (a 4-digit code which represents the facility's industrial activity(ies)).

"Site" means the land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.

"Site closure" means the point/time, as determined by the Director following the requirements, at which the owner or operator of a GS site is released from post-injection site care responsibilities.

"Sorption (absorption, adsorption)" as follows: Absorption refers to gases or liquids being incorporated into a material of a different state; adsorption is the adhering of a molecule or molecules to the surface of a different molecule.

"State" means one of the States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Trust Territory of the Pacific Islands (except in the case of RCRA), the Commonwealth of the Northern Mariana Islands, or an Indian Tribe that meets the statutory criteria which authorize EPA to treat the Tribe in a manner similar to that in which it treats a State (except in the case of RCRA).

"State/EPA Agreement" means an agreement between the Regional Administrator of the EPA and the State which coordinates EPA and State activities, responsibilities and program.

"Stratigraphic zone (unit)" means a layer of rock (or stratum) that is recognized as a unit based on lithology, fossil content, age or other properties.

"Stratum" (plural: strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.

"Subsidence" means the lowering of the natural land surface in response to: Earth movements; lowering of fluid pressure; removal of underlying supporting material by mining or solution of solids, either artificially or from natural causes; compaction due to wetting (hydro-compaction); oxidation of organic matter in soils; or added load on the land surface.

"Subsurface fluid distribution system" means an assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground into the earth materials or aquifer.

"Surface casing" means the first string of well casing to be installed in the well.

"Test Well" refers to a well that is constructed for the purpose of demonstrating that a location is appropriate for the intended injection activity.

"Total dissolved solids" (TDS) means the total dissolved (filterable) solids as determined by use of the method specified in 40 CFR Part 136. The measurement, usually in mg/L, for the amount of all inorganic and organic substances suspended in liquid as molecules, ions, or granules. For injection operations, TDS typically refers to the saline (i.e., salt) content of water-saturated underground formations.

"Total Maximum Daily Load" is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards. It is the sum of the allowable loads of a single pollutant from all contributing point and non-point sources, and includes a margin of safety and consideration of seasonal variations.

"Transferee" means the owner or operator receiving ownership and operational control of the well.

"Transferor" means the owner or operator transferring ownership and operational control of the well.

"Transmissive fault or fracture" means a fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.

"Trapping" means the physical and geochemical processes by which injected CO₂ is sequestered in the subsurface. Physical trapping occurs when buoyant CO₂ rises in the formation until it reaches a layer that inhibits further upward migration or is immobilized in pore spaces due to capillary forces. Geochemical trapping occurs when chemical reactions between dissolved CO₂ and minerals in the formation lead to the precipitation of solid carbonate minerals.

"Treatment" means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any "hazardous waste" so as to neutralize such wastes, or so as to recover energy or material resources from the waste, or so as to render such waste non-hazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume.

"UIC" means Underground Injection Control.

"Underground injection" means the subsurface emplacement of fluids, via a well.

"Underground Source(s) of Drinking Water" (USDW) means an aquifer or its portion: (1)(i) Which supplies any public water system; or (ii) Which contains a sufficient quantity of Groundwater to supply a public water system; and (A) Currently supplies drinking water for human consumption; or (B) Contains fewer than 10,000 mg/l total dissolved solids; and (2) Which is not an exempted aquifer. An aquifer or portion of an aquifer that supplies any public water system or that contains a sufficient quantity of Groundwater to supply a public water system, and currently supplies drinking water for human consumption, or that contains fewer than 10,000 mg/l total dissolved solids and is not an exempted aquifer.

"Upgradient" means an area that has a higher potentiometric surface (hydraulic head) than a comparative reference point.

"Viscosity" means the property of a fluid or semi-fluid that offers resistance to flow. As a supercritical fluid, CO₂ is less viscous than water and brine.

"Water pollution" means the human-made or human-induced alteration of the chemical, physical, biological, or radiological integrity of water.

"Well" means a bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or, a dug hole whose depth is greater than the largest surface dimension; or, an improved sinkhole; or, a subsurface fluid distribution system; For the purpose of these Regulations, this definition does not include geotechnical test; soil, telephone, and construction piling borings; fence posts, test pits, or horizontal closed loop heat pump circulation systems constructed within 20 feet of the ground surface.

"Well monitoring" means the measurement, by on-site instruments or laboratory methods, of the quality of water in a well.

"Well plug" means a watertight and gastight seal installed in a borehole or well to prevent movement of fluids.

"Well stimulation" means several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for wastewater to move more readily into the formation, and includes (1) surging, (2) jetting, (3) blasting, (4) acidizing, (5) hydraulic fracturing.

"Zone of endangering influence" means that area in which the proposed injection may cause the injected fluid pressure in the injection zone (including dynamic and buoyancy pressures) to exceed the formation fluid pressure in an underground source of drinking water (when corrected for the hydrostatic pressure difference).

5.0 Application for a permit

5.1 Applicability.

5.1.1 Any person who is required to obtain a permit under the UIC program shall complete, sign, and submit to the Department an application for each permit required under Section 32.0 of these Regulations.

5.1.2 The Department shall not begin the processing of a permit until the applicant has fully complied with the application requirements for that permit.

5.1.3 Permit applications must comply with the signature and certification requirements of Section 33.0 of these Regulations.

5.2 The Department shall review for completeness every application for a permit. If the application is incomplete, the Department shall list in writing the information necessary to make the application complete. When the application is for an existing UIC injection well the Department may specify in writing a date for submitting the necessary information. After the application is completed, the Department may request additional information from an applicant when necessary to clarify, modify, or supplement previously submitted material.

5.3 If an applicant fails or refuses to correct deficiencies in the application, the permit may be denied and appropriate enforcement actions may be taken under the applicable statutory provision. (see 7 Del.C. §6005)

5.4 If the Department decides that a site visit is necessary for any reason in conjunction with the processing of an application, he or she shall notify the applicant and a date shall be scheduled. This does not preclude unannounced site visits.

5.5 The effective date of an application is the date on which the Department notifies the applicant that the application is complete.

5.6 Large on-site wastewater treatment and disposal system application requirements are governed by the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems, or Regulations Governing the Control of Water Pollution, and do not require a separate UIC permit.

6.0 Consolidation of permit processing

6.1 Whenever a facility or activity requires a permit under more than one statute covered by these regulations, processing of two or more applications for those permits may be consolidated. The first step in consolidation is to prepare each draft permit at the same time.

6.2 Whenever draft permits are prepared at the same time, fact sheets (Section 9.0), public comment periods (Section 10.0), and any public hearings conducted pursuant to 7 **Del.C.** §6006 or any amending or superseding legislation on those permits may also be consolidated. The final permits may be issued together. They need not be issued together if in the judgment of the Department, joint processing would result in unreasonable delay in the issuance of one or more permits.

6.3 Whenever an existing facility or activity requires additional permits under one or more of the statutes covered by these Regulations, the Department may coordinate the expiration date(s) of the new permit(s) with the expiration date(s) of the existing permit(s) so that all permits expire simultaneously. Processing of the subsequent applications for renewal permits may then be consolidated.

6.4 Processing of permit applications may be consolidated as follows: The Department may consolidate permit processing and or draft permits at the Department's discretion whenever a facility or activity requires multiple DNREC permits.

7.0 Modification, revocation and reissuance, or termination of permits.

7.1 Permits may be modified, revoked and reissued, or terminated upon the Department's directive or public initiative only for the reasons specified in Sections 40.0 or 41.0. Any public requests for information, access or action regarding draft permits must be made during the public comment period. After the public comment period has closed and a permit has been issued, any public requests for modification, revocation, reissuance or termination of a permit shall be submitted in writing and contain meritorious facts or reasons supporting the request.

7.2 If the Department decides a request for modification, revocation, reissuance or termination of a permit is not justified, the Department shall send the requester a brief written response giving the reason or reasons for the decision. Denials of requests for modification, revocation and reissuance, or termination are not subject to public notice, comment, or hearings. Hearings arising from denials of requests for modification, revocation and reissuance, or termination shall be conducted as specified in 7 **Del.C.** §6008.

7.3 Permit Modification, Revocation and Reissuance.

7.3.1 If the Department tentatively decides to modify or revoke and reissue a permit under Section 40.0, the Department shall prepare a draft permit under Section 8.0, incorporating the proposed changes. The Department may request additional information and, in the case of a modified permit, may require the submission of an updated application. In the case of revoked and reissued permits, the Department shall require the submission of a new application.

7.3.2 When a permit is modified or revoked and reissued under this Section, the entire permit may be reopened just as if the permit had expired and was being reissued. During any modification, revocation and reissuance proceeding, the permittee shall comply with all conditions of the existing permit until a new final permit is reissued, provided that a complete UIC application was submitted at least 180 days prior to the expiration of the permit. (see Section 38.0)

7.3.3 "Minor modifications" as defined in Section 42.0 are not subject to the requirements of this Section.

7.4 If the Department tentatively decides to terminate a permit under Section 41.0 where the permittee objects, the Department shall issue a notice of intent to terminate. A notice of intent to terminate is a type of draft permit which follows the same procedures as any draft permit prepared under Section 8.0.

8.0 Draft permits.

8.1 Once an application is complete, the Department shall tentatively decide whether to prepare a draft permit or to deny the application.

8.2 If the Department tentatively decides to deny the permit application, the Department shall issue a notice of intent to deny. A notice of intent to deny the permit application shall follow the same procedures as any draft permit prepared under this Section. If the Department's final decision is that the tentative decision to deny the permit application was incorrect, the Department shall withdraw the notice of intent to deny and proceed to prepare a draft permit under subsection 8.3.

8.3 If the Department decides to prepare a draft permit, the Department shall prepare a draft permit that contains the following applicable information:

8.3.1 All conditions under Sections 43.0 and 44.0;

8.3.2 All compliance schedules under Section 45.0; and

8.3.3 All monitoring requirements under Section 46.0.

8.4 Draft permits shall be accompanied by a fact sheet if required under Section 9.0.

9.0 Fact sheet.

9.1 A fact sheet shall be prepared for every draft permit. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit. The Department shall send this fact sheet to the applicant and, on request, to any other person.

9.2 The fact sheet shall include, when applicable:

9.2.1 A brief description of the type of facility or activity which is the subject of the draft permit;

9.2.2 The type and quantity of wastes, fluids, or pollutants which are proposed to be or are being treated, stored, disposed of, injected, emitted, or discharged;

9.2.3 A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record;

- 9.2.4 A statement of reasons why any requested variances or alternatives to required standards are or are not justified;
- 9.2.5 A description of the procedures for reaching a final decision on the draft permit including:
 - 9.2.5.1 The beginning and ending dates of the comment period under Section 10.0 and the address where comments will be received;
 - 9.2.5.2 Procedures for requesting a hearing and the nature of that hearing; and
 - 9.2.5.3 Any other procedures by which the public may participate in the final decision.
- 9.2.6 Name and telephone number of a person to contact for additional information.

10.0 Public notice of permit actions and public comment period

10.1 Scope

10.1.1 The Department shall provide public notice that any of the following actions have occurred:

10.1.1.1 A permit application has been tentatively denied under subsection 8.2;

10.1.1.2 A draft permit has been prepared under subsection 8.3;

10.1.1.3 A hearing has been scheduled under 7 **Del.C.** §§6004 and 6006; or

10.1.1.4 An appeal to the EAB has been filed pursuant to 7 **Del.C.** §6008.

10.1.2 No public notice is required when a request for permit modification, revocation and reissuance, or termination is denied under subsection 7.2. Written notice of that denial shall be given to the requester and to the permittee.

10.1.3 Public notices may describe more than one permit or permit actions if the applicant or permittee is the same person.

10.2 Timing

10.2.1 Public notice of the preparation of a draft permit or a notice of intent to deny a permit application required under subsection 10.1 shall allow at least 30 days for public comment.

10.2.2 Public notice of a public hearing shall be provided at least 30 days before the hearing. Public notice of the hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.

10.2.3 Public notice is not required for activities approved by a Rule Authorization letter.

10.3 Methods. Public notice of activities described in subsection 10.1.1 shall be given by the following methods:

10.3.1 By mailing a copy of a notice to the following persons (any person otherwise entitled to receive notice under this Section may waive his or her rights to receive notice for any classes and categories of permits);

10.3.1.1 The applicant;

10.3.1.2 Any other agency which the Department knows has issued or is required to issue a permit for the same facility or activity;

10.3.1.3 Federal and State agencies with jurisdiction over fish, shellfish, wildlife resources, coastal zone management plans, the Advisory Council on Historic Preservation, and the State Historic Preservation Officer, including any affected States.

10.3.1.4 Persons on a mailing list developed by:

10.3.1.4.1 Including those who request in writing to be on the list;

10.3.1.4.2 Soliciting persons for "area lists" from participants in past permit proceedings in that area; and

10.3.1.4.3 Informing the public of the opportunity to be put on a notification list, via the Delaware Environmental Navigator website.

10.3.1.5 To any unit of local government having jurisdiction over the area where the facility is proposed to be located; and

10.3.1.6 To each State agency having any authority under State law or regulation with respect to the construction or operation of such facility.

10.3.2 For permits, publication of a notice in a daily or weekly newspaper within the area affected by the facility or activity;

10.3.3 In a manner constituting legal notice to the public under this Section and 7 **Del.C.** §6004.

10.3.4 Any other method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum or medium to elicit public participation.

10.4 Contents

10.4.1 All public notices. All public notices issued under this part shall contain the following minimum information:

10.4.1.1 The name and address of the office processing the permit action for which notice is being given;

10.4.1.2 The name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit,

10.4.1.3 A brief description of the business conducted at the facility or activity described in the permit application;

10.4.1.4 The name, address and telephone number of a person from whom interested persons may obtain further information, including copies of the draft permit or draft general permit, as the case may be, a copy of the fact sheet, and a copy of the application; and

10.4.1.5 A brief description of the comment procedures required by Section 11.0 of these Regulations and by 7 **Del.C.** §6006 and the time and place of any hearing that will be held, including a statement of procedures to request a hearing (unless a hearing has already been scheduled) and other procedures by which the public may participate in the final permit decision.

10.4.1.6 Any additional information considered necessary.

10.4.2 Public notices for hearings. In addition to the general public notice described in subsection 10.4.1, the public notice of a hearing under 7 **Del.C.** §6006 shall contain the following information:

10.4.2.1 Reference to the date(s) of previous public notices relating to the permit;

10.4.2.2 The date, time, and place of the hearing; and

10.4.2.3 A brief description of the nature and purpose of the hearing, including identification of the applicable rules and procedures (copies of which shall be provided upon request).

10.5 In addition to the general public notice described in subsection 10.4.1, persons identified in subsection 10.3 may be mailed a copy of the fact sheet, the permit application, and the draft permit.

10.6 The applicant shall be responsible for all costs associated with advertising the Public Notice and the Public Hearing Notice.

11.0 Public comments and requests for public hearings

During the public comment period provided under Section 10.0, any interested person may submit written comments on the draft permit and may request a public hearing, if no hearing has already

been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments shall be considered in making the final decision and shall be answered as provided in Section 17.0 of these Regulations.

12.0 Public hearings

Public hearings shall be governed by the provisions of 7 **Del.C.** §6006 and by the Delaware Administrative Procedures Act, 29 **Del.C.** Ch.101 and by any amending or superseding legislation. A public hearing shall be held on any application if the Secretary deems significant public interest exists to do so.

13.0 Obligation to raise issues and provide information during the public comment period

All persons, including applicants, who believe any condition of a draft permit is inappropriate or that the Department's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, must by the close of the public comment period (including any public hearing) under Section 10.0, raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position. Any supporting materials which are submitted shall be included in full and may not be incorporated by reference. There is no need to provide copies of State or Federal statutes and regulations, EPA documents of general applicability, or other generally available reference materials. Such items may be referred to by citation in the submission but copies shall be provided to the DNREC upon request. Commenters shall make supporting materials not already included in the administrative record available to the DNREC as reasonably requested by the Department. A comment period longer than 30 days may be necessary to give commenters a reasonable opportunity to comply with the requirements of this Section. Additional time shall be granted under Section 10.0 upon a showing of good cause by a commenter who requests additional time.

14.0 Reopening of the public comment period

14.1 The Department may order the reopening of the public comment period if he or she determines that doing so pursuant to this Section could expedite the decision making process. The public comment period may be reopened at the request of any person, including applicants, who (1) believe that any condition of a draft permit is inappropriate or (2) question the Department's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate. All persons, including applicants, who request the reopening of the public comment period must submit all reasonably available facts supporting their challenge no less than 30 days from the date of public notice. Thereafter, any person may file a written response to the submission of any other person, by a date set by the Department which shall be at least 20 days after the date of the submission to which response is made.

14.1.1 The Department may direct that the requirements of subsection 14.1 shall apply during the initial comment period where it reasonably appears that issuance of the permit will be contested and that applying the requirements of subsection 14.1 will substantially expedite the decision making process. The notice of the draft permit shall state whenever this has been done.

14.1.2 A longer comment period will often be necessary in complicated proceedings to give commenters a reasonable opportunity to comply with the requirements of this Section. Commenters

may request longer comment periods and extensions shall be granted under Section 10.0 to the extent they appear necessary.

14.2 If any data, information, or arguments submitted during the public comment period, including information or arguments required under Section 13.0, appear to raise substantial new questions concerning a permit, the Department may take one or more of the following actions:

14.2.1 Prepare a new draft permit, appropriately modified, under Section 8.0;

14.2.2 Prepare a revised fact sheet under Section 9.0 and reopen the comment period under this Section; or

14.2.3 Reopen or extend the comment period under Section 10.0 to give interested persons an opportunity to comment on the information or arguments submitted.

14.3 Comments filed during the reopened comment period shall be limited to the substantial new questions that caused its reopening pursuant to this Section. The public notice under Section 10.0 shall define the scope of the reopening.

14.4 Public notice of any of the above actions shall be issued under Section 10.0.

15.0 Issuance and effective date of permit

15.1 After the close of the public comment period under Section 10.0 on a draft permit, the Department shall issue a final permit decision. The Department shall notify the applicant and each person who has submitted written comments or requested notice of the final permit decision. This notice shall include reference to the procedures for appealing a decision on a UIC permit as provided in 7 Del.C. §§6008 and 6009 and by any amending or superseding legislation. For the purposes of this Section, a final permit decision means a final decision to issue, deny, modify, revoke and reissue, or terminate a permit.

15.2 A final permit decision shall become effective 30 days after the service of notice of the decision unless:

15.2.1 A later effective date is specified in the decision;

15.2.2 A review is requested, in accordance with DNREC Environmental Appeals Board (EAB) requirements; or

15.2.3 No comments requested a change in the draft permit, in which case the permit shall become effective immediately upon issuance.

16.0 Application to Stay Contested Permit Action

No appeal shall automatically stay any action of the Department; but upon application, and for good cause, the Department or the Court of Chancery may stay the action pending disposition of the appeal.

17.0 Response to comments

17.1 The Department shall issue a response to comments when a final permit is issued. This response shall:

17.1.1 Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and

17.1.2 Briefly describe and respond to all significant comments on the draft permit raised during the public comment period, or during any hearing.

17.2 Any documents cited in the response to comments shall be included in the administrative record for the final permit decision. If new points are raised or new material supplied during the public comment period, the Department may document a response to those matters by adding new materials to the administrative record.

17.3 The response to comments shall be available to the public.

18.0 Appeal of UIC Permits

Any appeal of a UIC permit shall be governed by 7 **Del.C.** §6008 and by any amending or superseding legislation.

19.0 Computation of time

In computing any period of time prescribed or allowed by these Regulations, by order of court, or by statute, the day of the act, event, or default after which the designated period of time begins to run shall not be included. As used in this rule, "legal holidays" shall be those days provided by statute or appointed by the Governor or the Chief Justice of the State of Delaware.

Part 144 - General Provisions - Sections 20.0-54.0

20.0 Purpose and scope

20.1 Content of Part 144. Part 144 (Sections 20.0-54.0) set forth requirements for the Underground Injection Control (UIC) program promulgated under Part C of the Safe Drinking Water Act (SDWA).

20.2 Applicability. The Regulations in this Part establish minimum requirements for Delaware's UIC program.

20.3 All underground injections in Delaware are unlawful and subject to penalties unless authorized by rule, authorized by a permit or Rule Authorization letter. This Part sets forth the requirements governing all UIC programs, activities authorized by rule, Rule Authorization letters, or Permit(s) and prohibits certain types of injection. The technical regulations governing these authorizations appear in Part 146 (Sections 55.0-70.0).

20.4 Scope of the permit and other program requirements. The UIC Permit Program regulates underground injections by six classes of wells. The six classes of wells are set forth in Section 58.0. All owners or operators of injection wells that are not authorized by rule in this Regulation shall receive written approval from the Department prior to constructing the injection activity. Injection that results in the movement of fluid containing any contaminant into Underground Sources of Drinking Water (USDW), if the presence of that contaminant may cause a violation of any primary drinking water regulation or may adversely affect the health of persons (Section 24.0) is prohibited. For Class V wells, if such prohibited fluid movement occurs, a permit may be required (Section 29.0) or the Department may require remedial action or closure by Order (Section 24.0). An aquifer is a USDW if it fits the definition, even if it has not been "identified."

20.4.1 Specific inclusions. The following wells are included among those types of injection activities which are addressed by Delaware UIC regulations. (This list is not intended to be exclusive but is for clarification only.)

20.4.1.1 Any injection well located on a drilling platform inside the State's territorial waters.

20.4.1.2 Any dug hole or well that is deeper than its largest surface dimension, where the principal function of the hole is emplacement of fluids.

20.4.1.3 Any on-site wastewater treatment and disposal system (septic), or other injection well used by a multiple dwelling, community, or regional system, for the injection of wastes, that are not permitted through the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems. See Section 53.0 regarding cesspool requirements.

20.4.1.4 Any percolation ponds in direct contact with the water table.

20.4.2 Specific exclusions. The following are not covered by these regulations:

20.4.2.1 Individual or single family residential waste disposal systems such as domestic on-site wastewater treatment and disposal (septic) systems, which are addressed in the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems.

20.4.2.2 Water softener backwash from individual or single family residential water softeners.

20.4.2.3 Any dug hole, drilled hole, or bored shaft which is not used for the subsurface emplacement of fluids.

20.5 Bypassing

20.5.1 Any bypass of treatment facilities, or component thereof necessary to maintain compliance with the terms and conditions of a UIC permit or Rule Authorization Letter is prohibited unless:

20.5.1.1 The bypass is unavoidable to prevent loss of life, personal injury or severe property damage;

20.5.1.2 There are no alternatives;

20.5.1.3 The Department is orally notified within 24 hours after such bypass; and, a written submission regarding the bypass is submitted within five (5) days of the permittee's becoming aware of the bypass. Where the need for a bypass is known (or should have been known) in advance, this notification shall be submitted to the Department for approval at least 10 days prior or as soon as possible before the date of bypass; and

20.5.1.4 The bypass is allowed under conditions determined by the Department to be necessary to minimize adverse effects as provided under 7 **Del.C.** §6011.

20.6 Adverse Impact. Permittees shall take all steps to minimize any adverse impact to a USDW resulting from operation under the permit. Such steps may include, but not be limited to, accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or mitigation of such impacts.

20.7 State Laws. A UIC permit or Rule Authorization Letter shall not be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation.

20.8 Property Rights. The issuance of a UIC permit or Rule Authorization letter does not convey any property rights of either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

21.0 Confidentiality of information

21.1 Any information submitted to the Department pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission, in

accordance with the Department's Freedom of Information Act Regulations and the Freedom of Information Act, 29 Del.C. Ch. 100. If no claim of confidentiality is made at the time of submission, the Department may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with Department procedures.

21.2 The following information shall not be deemed confidential:

21.2.1 The name and address of any permit applicant or permittee;

21.2.2 Information relating to the existence, absence, or level of contaminants in drinking water; and

21.2.3 Any monitoring data submitted as part of a permit application or submitted as part of a permit requirement.

22.0 Identification of underground sources of drinking water and exempted aquifers

22.1 The Department may identify (by narrative description, illustrations, maps, or other means) and shall protect as an underground source of drinking water, all aquifers or parts of aquifers which meet the definition of an "underground source of drinking water" in Section 4.0 except where exempted under subsection 22.2. Even if an aquifer has not been specifically identified by the Department, it is an underground source of drinking water if it meets the definition in Section 4.0.

22.2 The Department may identify (by narrative description, illustrations, maps, or other means) and describe in geographic and geometric terms (such as vertical and lateral limits and gradient) which are clear and definite, all aquifers or parts thereof which the Department proposes to designate as exempted aquifers using the criteria in Section 57.0.

22.3 No designation of an exempted aquifer submitted as part of a UIC Program shall be final until approved by the EPA Administrator as part of Delaware's UIC program.

22.4 Subsequent to program approval or promulgation, the Department may, after notice and opportunity for a public hearing, identify additional exempted aquifers. Aquifer exemptions shall only occur if the Department submits the exemption in writing to the EPA Administrator and the EPA Administrator has not disapproved the designation.

23.0 Prohibition of unauthorized injection

Any underground injection, except into a well authorized by rule or has been authorized by Rule Authorization letter or permit issued under the UIC program, is prohibited. The construction of any well required to have a UIC permit or Rule Authorization letter is prohibited until the UIC permit or Rule Authorization letter has been issued.

24.0 Prohibition of movement of fluid into underground sources of drinking water

24.1 No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of the State of Delaware Primary Drinking Water Standards or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this Section are met.

24.2 For Class I wells, if any water quality monitoring of an underground source of drinking water indicates the movement of any contaminant into the underground source of drinking water, except as authorized under Sections 55.0-70.0, the Department shall prescribe such additional requirements for

construction, corrective action (including closure of the injection well), operation, monitoring, or reporting as are necessary to prevent such movement. These additional requirements may be imposed by modifying the permit in accordance with Section 40.0, or the permit may be terminated under Section 41.0. Appropriate enforcement action may be taken if a permit condition has been violated.

24.3 For Class V wells, if at any time the Department learns that a Class V well may cause a violation of primary drinking water regulations under State of Delaware Public Drinking Water Systems, the Department shall:

24.3.1 Require the injector to obtain an individual UIC permit;

24.3.2 Order the injector to take such actions (including, where required, closure of the injection well) as may be necessary to prevent the violation; or

24.3.3 Take enforcement action.

24.4 Whenever the Department learns that a Class V well may be otherwise adversely affecting the health of persons, the Department may prescribe such actions as may be necessary to prevent the adverse effect, including any action authorized under subsection 24.3.

24.5 Notwithstanding any other provision of this Section, the Department may take emergency action upon receipt of information that a contaminant which may constitute an imminent and substantial danger or threat to the health of persons is present in or is likely to enter a public water system or USDW.

25.0 Prohibition of unauthorized injection; Prohibition of all Class II, III, IV and VI wells; Prohibition of Class I and V wells

25.1 The following is prohibited, except as provided in subsection 25.1.2:

25.1.1 The construction, use, operation, or modification of any of the following wells is hereby expressly prohibited and no permit may be issued for any such activity in Delaware: Class I well used to inject hazardous waste; Class II, Class III, Class IV, and Class VI injection wells.

25.1.2 Wells used to inject contaminated Groundwater that has been treated to primary drinking water standards and is being re-injected into the same formation from which it was drawn are not prohibited by this Section if such injection is approved by the Department pursuant to provisions for cleanup of releases under the appropriate DNREC or Federal program.

26.0 Waiver of requirement by Department

26.1 When injection does not occur into or through an underground source of drinking water, the Department may authorize a well or project with less stringent requirements for area of review, construction, mechanical integrity, operation, monitoring, and reporting than required in Part 146 (Sections 55.0-70.0) or Section 44.0 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.

26.2 When injection occurs through or above an underground source of drinking water, but the radius of endangering influence when computed under Section 59.0 is smaller or equal to the radius of the well, the Department may authorize a well or project with less stringent requirements for operation, monitoring, and reporting than required in Part 146 (Sections 55.0-70.0) or Section 44.0 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.

26.3 When reducing requirements under subsection 26.1 or 26.2, the Department shall prepare a fact sheet under Section 9.0, explaining the reasons for the action.

27.0 Records

The Department may require, by written notice, an owner or operator of an injection well to establish and maintain records, make reports, conduct monitoring, and provide other information as is deemed necessary to determine whether the owner or operator has acted or is acting in compliance with these Regulations. All records shall be maintained for a minimum of five (5) years beyond Permit expiration date. All records and information resulting from the monitoring activities required by this Permit including all records of analyses performed calibration and maintenance of instrumentation and recording from continuous monitoring instrumentation shall be retained for five (5) years. This period of retention shall be automatically extended during the course of any unresolved litigation regarding the regulated activity or regarding control standards applicable to the permittee, or as requested by the Department.

28.0 Class V wells

28.1 A Class V injection well may be authorized by rule, subject to the conditions in Section 52.0.

28.2 Duration of well authorization by rule. Wells that are authorization by rule under this Section expire upon the noted expiration date of the authorization, the issuance of a permit, or upon proper closure of the well (when applicable).

28.3 Prohibition of injection. An owner or operator of a well which is authorized by rule pursuant to this Section is prohibited from injecting into the well:

28.3.1 Any fluid that would cause a violation of any primary drinking water standard;

28.3.2 Upon the effective date of an applicable permit denial;

28.3.3 Upon failure to submit a permit application in a timely manner pursuant to 32.0;

28.3.4 Upon failure to submit inventory information in a timely manner pursuant to Section 30.0; or

28.3.5 Upon failure to comply with a request for information in a timely manner pursuant to Section 31.0.

29.0 Classes of wells requiring a permit

29.1 The Department shall require the owner or operator of any Class V injection well that is not authorized by rule to apply for and obtain an individual UIC permit. An individual UIC permit shall also be required when:

29.1.1 The injection well is not in compliance with one or more conditions of the rule. Any underground injection which violates any authorization by rule is subject to appropriate enforcement action.

29.1.2 The injection well is no longer within the category of wells and types of well operations authorized in these Regulations.

29.1.3 The protection of USDWs requires that the injection operation be regulated by requirements, such as for corrective action, monitoring and reporting, mechanical integrity (as applicable), or operation, which are not contained in the rule.

29.1.4 When the injection well is a Class I well, in accordance with a schedule established by the Department pursuant to Section 32.0.

29.2 Class V injection wells utilized for large and community wastewater disposal systems and OWTDS shall be permitted in accordance with the State of Delaware Regulations Governing the Design, Installation and Operation of On-site Wastewater Treatment and Disposal Systems, and do not require a separate UIC permit.

29.3 An owner or operator of a well that has been authorized by rule may request to be excluded from the coverage of this subpart by applying for an individual UIC permit. Such owner or operator shall submit to the Department an application under Section 32.0 with reasons supporting the request. The Department may grant or deny any such requests at the Department's discretion.

30.0 Inventory requirements

30.1 The owner or operator of an injection well which is authorized by rule under this subpart shall submit inventory information to the Department. Such an owner or operator is prohibited from injecting into the well if such inventory information is not submitted in a timely manner, as requested by the Department.

30.1.1 Contents. As part of the inventory, the owner/operator shall provide at least the following information:

30.1.1.1 Facility name and physical location;

30.1.1.2 Name, physical address and phone number of legal contact;

30.1.1.3 Ownership of facility;

30.1.1.4 Quantity and type of injection wells;

30.1.1.5 Operating status of injection wells;

30.1.1.6 Any other information requested; and

30.1.1.7 A response to any written request for information from the GWDS.

30.2 The Department shall notify owners or operators of injection wells of their duty to submit inventory information.

31.0 Requiring other information

31.1 The Department may require the owner or operator of any well that has been authorized by rule under this subpart to submit information deemed necessary by the Department to determine whether a well may be contaminating, or poses a threat of contamination to, an underground source of drinking water in violation of Section 24.0.

31.2 The Department may require, among other things:

31.2.1 Performance of groundwater monitoring and the periodic submission of reports of such monitoring;

31.2.2 An analysis of injected fluids, including periodic submission of such analyses; and

31.2.3 A description of the geologic strata through and into which injection is taking place.

31.2.4 A determination of the location of private supply wells and public supply wells within ¼ mile radius from the injection area.

31.3 Any request for information under this Section shall be made by the Department in writing, and may include a brief statement of the reasons for requiring the information. An owner or operator shall submit the information within the time period(s) provided in the notice.

31.4 An owner or operator of an injection well that has been authorized by rule under this subpart is prohibited from injecting into such well if the owner or operator fails to comply with a request for

information within the time period(s) specified by the Department pursuant to subsection 31.3. An owner or operator of a well prohibited from injection under this Section shall not resume injection except under a permit issued pursuant to Section 29.0 or 32.0.

31.5 The applicant is required to submit any requested information, within the time requested by the GWDS or the application may be returned as incomplete.

32.0 Application for a permit

32.1 Permit application. Unless an underground injection well is authorized by rule, all injection activities including construction of an injection well are prohibited until the owner or operator has received a Rule Authorization letter or a Permit. An owner or operator of a well that is currently authorized by rule must apply for a permit under this Section if the owner or operator fails to comply with the authorization by rule. Authorization by rule for a well or project for which a permit application has been submitted terminates for the well or project upon the effective date of the permit. Procedures for applications, issuance and administration of emergency permits are found in Section 35.0.

32.2 Potential Applicants. When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit; however, the Department may require that the property owner obtain a permit.

32.3 Time to apply. Any person who performs or proposes an underground injection for which a permit is or will be required shall submit an application to the Department in accordance with the UIC program as follows:

32.3.1 For existing, unpermitted injection activities or wells, within 180 days from being located, must come into compliance with these regulations or subsequent revisions thereof.

32.3.2 For new injection wells, a minimum of 60 days before construction is expected to begin.

32.4 Completeness. The Department will not issue a permit before receiving a complete application for a permit. An application for a permit is complete when the Department receives an application form and any supplemental information which are completed to the Department's satisfaction. The completeness of any application for a permit shall be judged independently of the status of any other permit application or permit for the same facility or activity.

32.5 Information requirements. All applicants for permits shall provide the following information to the Department, using the application form provided by the Department.

32.5.1 The activities conducted by the applicant which require it to obtain a permit(s) under UIC.

32.5.2 The name, mailing address, and physical location of the facility for which the application is submitted.

32.5.3 Up to four (4) SIC or NAICS codes which best reflect the principal products or services provided by the facility.

32.5.4 The owner's and operator's (if different from owner) name, physical address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.

32.5.5 A listing of all permits or construction approvals received or applied for under any of the following programs:

32.5.5.1 Hazardous Waste Management program under RCRA.

32.5.5.2 UIC program under SDWA.

32.5.5.3 NPDES program under CWA.

- 32.5.5.4 Prevention of Significant Deterioration (PSD) program under the Clean Air Act.
- 32.5.5.5 Nonattainment program under the Clean Air Act.
- 32.5.5.6 National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act.
- 32.5.5.7 Ocean dumping permits under the Marine Protection Research and Sanctuaries Act.
- 32.5.5.8 Dredge and fill permits under Section 404 of CWA.
- 32.5.5.9 Other relevant environmental permits, including State permits (including well permits).
- 32.5.6 A scaled, color topographic map (or other map approved by DNREC if a topographic map is unavailable) extending one (1) mile beyond the property boundaries of the source, depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, and other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within a quarter ($\frac{1}{4}$) mile of the facility property boundary.
- 32.5.7 A brief description of the nature of the business.
- 32.5.8 A plugging and abandonment plan that meets the requirements of Section 63.0 and is acceptable to the Department.
- 32.5.9 A map showing the extent of the plume of contamination, even beyond the property boundary lines of injection property, for each contaminant.
- 32.6 Recordkeeping. Applicants shall keep for at least five (5) years from the date of submission all data used to complete permit applications and any supplemental information submitted in support of an application or written UIC approval.
- 32.7 Other information, as specified on the UIC application form.

33.0 Signatories and certifications to permit applications and reports

- 33.1 Applications. All permit applications shall be signed as follows:
 - 33.1.1 For a corporation: by a responsible corporate officer. For the purpose of this Section, a responsible corporate officer means:
 - 33.1.1.1 A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or
 - 33.1.1.2 The manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
 - 33.1.2 For a partnership or sole proprietorship: by a partner, a general partner or the proprietor, respectively; or
 - 33.1.3 For a municipality, State, Federal, or other public agency: by either a principal executive officer or other official who is authorized by statute, ordinance, regulation, or other applicable procedure to bind the governmental entity. For purposes of this section, a principal executive officer of a Federal agency includes: (i) The chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

33.2 Reports. All reports required by permits and other information requested by the Department in the course of evaluating a permit application shall be signed by a person described in Section 33.0, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

33.2.1 The authorization is made in writing by a person described in subsection 33.1;

33.2.2 The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

33.2.3 The written authorization is approved by the Department.

33.3 Changes to authorization. If an authorization under Section 33.0 is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Section 33.0 must be submitted to the Department prior to or together with any reports, information, or applications to be signed by an authorized representative.

33.4 Certification. Any person signing a document under subsection 33.1 or 33.2 shall make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

33.5 Certification by a Professional Engineer and Professional Geologist.

33.5.1 All applications for Class I injection wells and Class V injection wells that penetrate through a USDW shall be sealed and certified by a professional engineer or professional geologist (as applicable), in compliance with these regulations and the professional regulations of the State of Delaware.

33.5.2 The application, plans, and specifications, certification of construction completion reports, operation and maintenance manual, and other related documents shall be certified by a professional engineer or professional geologist, as applicable, registered in the State of Delaware and retained by the applicant for that purpose.

33.5.3 All applications for Class I injection wells and Class V injection wells that penetrate through a USDW shall contain the following statement:

I certify that the features of this injection point have been designed or examined by me and found to be in conformity with modern principles of injection of fluids and well design for the purpose described in this application. There is reasonable assurance, in my professional judgment, that the injection point, when properly maintained and operated, will discharge the fluid in compliance with all applicable statutes of the State of Delaware and the rules and regulations of the Department of Natural Resources and Environmental Control. It is agreed that the undersigned will furnish the applicant with a set of instructions for proper maintenance and operation of the injection point.

34.0 Area permits

All injection activities in Delaware require approval. No Area permits will be issued.

35.0 Emergency permits

35.1 Coverage. Notwithstanding any other provision of these Regulations, the Department may temporarily permit a specific underground injection if:

35.1.1 An imminent and substantial endangerment to the health of persons will result unless a temporary emergency permit is granted;

35.1.2 Timely application for a permit could not practicably have been made; and

35.1.3 The injection will not result in the movement of fluids into underground sources of drinking water.

35.2 Requirements for issuance.

35.2.1 Any temporary permit under subsection 35.1.1 shall be valid for no longer than required to prevent the hazard.

35.2.2 Any temporary permit under subsection 35.1.2 shall be for no longer than 90 days, except that if a permit application has been submitted prior to the expiration of the 90 day period, the Department may extend the temporary permit until final action on the application.

35.2.3 Notice of any temporary permit under this Section shall be published in accordance with Section 10.0.

35.2.4 The temporary permit under this Section may be either oral or written. If oral, it must be followed within five (5) calendar days by a written temporary emergency permit.

35.2.5 The Department shall condition the temporary permit in any manner determined to be necessary to ensure that the injection will not result in the movement of fluids into an underground source of drinking water.

36.0 Effect of a permit

36.1 A permit may be modified, revoked and reissued, or terminated during its term, for cause as set forth in Sections 40.0 and 41.0. Compliance with a permit during its term constitutes compliance, for the purposes of enforcement, with Part C of the SWDA.

36.2 The issuance of a permit does not convey property rights of any sort, or any exclusive privilege.

36.3 The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

37.0 Duration of permits

37.1 Permits for Class I and Class V injection wells shall be effective for a fixed term not to exceed five (5) years. The Department may review each issued UIC permit prior to permit expiration to determine whether it should be modified, revoked and reissued, terminated, or a minor modification made as provided in Sections 40.0, 41.0, and 42.0.

37.2 Except as provided in Section 38.0, the term of a permit shall not be extended by modification beyond the maximum duration of five (5) years.

37.3 The Department may issue any permit under these Regulations for a duration that is less than five (5) years.

38.0 Continuation of expiring permits

38.1 The conditions of an expired permit continue in force until the effective date of a new permit if:

38.1.1 The permittee has submitted a complete application within 180 days prior to expiration of the current permit; and

38.1.2 The Department, through no fault of the permittee, does not issue a new permit with an effective date on or before the expiration date of the previous permit.

38.2 Effect. Permits continued under this Section remain fully effective and enforceable.

38.3 Enforcement. When the permittee is not in compliance with the conditions of the expiring or expired permit the Department may choose to do any or all of the following:

38.3.1 Initiate enforcement action based upon the permit which has been continued;

38.3.2 Issue a notice of intent to deny the new permit. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;

38.3.3 Issue a new permit under Part 124 (Sections 3.0-19.0) with appropriate conditions; or

38.3.4 Take other actions authorized by these regulations.

38.4 State continuation. The UIC program may continue permits until the effective date of the new permit.

39.0 Transfer of permits

39.1 Transfers by modification. Except as provided in subsection 39.2, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under Section 40.0), or a minor modification made (under Section 42.0), to identify the new permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act.

39.2 Requested transfers. As an alternative to transfers under subsection 39.1, any UIC permit may be transferred to a new permittee if:

39.2.1 The current permittee notifies the Department at least 30 days in advance of the proposed transfer date referred to in subsection 39.2.2;

39.2.2 A written agreement is submitted to the Department, signed by all parties to the transfer, containing a specific date for transfer of permit responsibility, coverage and liability between the current and new permittees, and the notice demonstrates that the financial responsibility requirements of subsection 44.1.7 will be met by the new permittee; and

39.2.3 The Department notifies the existing permittee and the proposed new permittee of the Department's intent to modify, revoke and reissue, or terminate the permit and to require that a new application be filed rather than agreeing to the transfer of the permit. A modification under this Section may also be a minor modification under Section 42.0.

40.0 Modification or revocation and reissuance of permits

40.1 When the Department receives any information (for example, inspects the facility, receives information submitted by the permittee as required in the permit, receives a request for modification or revocation and reissuance under Section 7.0, or conducts a review of the permit file) he or she may determine whether or not one or more of the causes listed in subsection 40.2 for modification or

revocation and reissuance or both exist. If cause exists, the Department may modify or revoke and reissue the permit accordingly, and may request an updated application if necessary. If a permit is modified or revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. If a permit modification satisfies the criteria in Section 42.0 for "minor modifications," the permit may be modified without a draft permit or public review. Otherwise, a draft permit must be prepared and other procedures in Part 124 (Sections 3.0-19.0) must be followed.

40.2 Causes for modification. The following may be cause for revocation and/or reissuance as well as modification when the permittee requests or agrees.

40.2.1 Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that differ from or are absent from the existing permit.

40.2.2 Information. The Department has received information that was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of different permit conditions based on standards in effect at the time of issuance.

40.2.3 New regulations. The standards or regulations on which the permit was based have been changed by promulgation of new or amended standards or regulations or by judicial decision after the permit was issued. Permits may be modified during their terms for this reason as follows:

40.2.3.1 For promulgation of new or amended standards or regulations, when:

40.2.3.1.1 The permit condition requested to be modified was based on a promulgated Part 146 (Sections 55.0-70.0) regulation;

40.2.3.1.2 The Department has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based, and

40.2.3.1.3 A permittee requests modification in accordance with Section 7.0 within 90 days after public notice of the action on which the request is based.

40.2.3.2 For judicial decisions, a court of competent jurisdiction has remanded and stayed DNREC-promulgated regulations if the remand and stay concerned that portion of the regulations on which the permit condition was based and a request is filed by the permittee in accordance with Section 7.0 within 90 days of judicial remand.

40.2.4 Compliance schedules. The Department determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy.

40.3 Causes for modification or revocation and reissuance. The following are causes to modify or, alternatively, revoke and reissue a permit:

40.3.1 Cause exists for termination under Section 41.0, and the Department determines that modification or revocation and reissuance is appropriate.

40.3.2 The Department has received notification of a proposed transfer of the permit. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee.

40.3.3 A determination that the waste being injected is a hazardous waste as defined in 40 CFR 261.3 either because the definition has been revised, or because a previous determination has been changed.

40.4 Facility siting. Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.

41.0 Termination of permits

41.1 The Department may terminate a permit during its term, or deny a permit renewal application for the following causes:

41.1.1 Noncompliance by the permittee with any condition of the permit;

41.1.2 The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or

41.1.3 A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.

41.2 The Department shall follow the applicable procedures in Part 124 (Sections 3.0-19.0) in terminating any permit under this Section.

42.0 Minor modifications of permits

42.1 The Department may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this Section, without following the procedures of Part 124 (Sections 3.0-19.0). Any permit modification not processed as a minor modification under this Section must be made for cause and with Part 124 draft permit and public notice as required in Section 40.0. Minor modifications may only:

42.1.1 Correct typographical errors;

42.1.2 Require increased monitoring or reporting by the permittee;

42.1.3 Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement;

42.1.4 Allow for a change in ownership or operational control of a facility where the Department determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to and approved in writing by the Department;

42.1.5 Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Department, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification;

42.1.6 Change construction requirements approved by the Department pursuant to Section 44.0, provided that any such alteration shall comply with the requirements of this Part and Part 146 (Sections 55.0-70.0); or

42.1.7 Amend a plugging and abandonment plan which has been updated under subsection 44.1.6.

43.0 Conditions applicable to all Permits and Major Class V Injection Wells

43.1 The following conditions apply to all UIC permits and Major Class V Injection Wells. All conditions applicable to all permits and Major Class V Injection Wells shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these

regulations (or the other applicable State regulations) may be given in the permit or Rule Authorization letter.

43.1.1 Permits shall be issued in a manner and shall contain conditions consistent with requirements of applicable Federal laws.

43.2 Duty to comply. The permittee must comply with all conditions of a permit. Any permit noncompliance constitutes a violation of 7 **Del.C.** §6003 and any amending or superseding legislation and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

43.3 Duty to reapply. If the permittee wishes to continue an activity regulated by a permit after the expiration date of a permit, the permittee must submit a complete application for a new permit at least 180 days prior to the expiration of the current permit, unless otherwise stated in the permit.

43.4 Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of a permit.

43.5 Duty to mitigate. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with a permit.

43.6 Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of a permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.

43.7 Permit actions. A permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes, or anticipated noncompliance, does not stay any permit condition.

43.8 Property rights. A permit does not convey any property rights of any sort, or any exclusive privilege.

43.9 Duty to provide information. The permittee shall furnish to the Department, within a time specified, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating a permit, or to determine compliance with a permit. The permittee shall also furnish to the Department, upon request, copies of records required to be kept under the terms of the permit.

43.10 Inspection and entry. As authorized by 7 **Del.C.** §6024, the permittee shall allow the Department, or an authorized representative, to:

43.10.1 Enter upon the permittee's property where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of a permit;

43.10.2 Have access to and copy, at reasonable times, any records that must be kept under the conditions of a permit;

43.10.3 Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under a permit; and

43.10.4 Sample or monitor, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.

43.11 Monitoring and records.

43.11.1 Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

43.11.2 The permittee shall retain records of all monitoring information, including the following:

43.11.2.1 Calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by a permit, and records of all data used to complete an application for a permit, for a period of at least three (3) years from the date of the sample, measurement, report, or application. This period may be extended by the Department at any time; and

43.11.2.2 The nature and composition of all injected fluids until three (3) years after the completion of any plugging and abandonment. The Department may require the owner or operator to deliver the records to the Department at the conclusion of the retention period.

43.11.3 Records of monitoring information shall include:

43.11.3.1 The date, exact physical location, sampling method and time of sampling or measurements;

43.11.3.2 The names of the individual(s) who performed the sampling or measurements;

43.11.3.3 The date(s) analyses were performed;

43.11.3.4 The names of the individual(s) who performed the analyses;

43.11.3.5 The analytical techniques or methods used; and

43.11.3.6 The results of such analyses.

43.12 Signatory requirement. All applications, reports, or information submitted to the Department shall be signed and certified pursuant to Section 33.0.

43.13 Reporting requirements.

43.13.1 Planned changes. The permittee shall give advance notice to the Department of any planned physical alterations or additions to the permitted facility that may affect any permitted or authorized UIC activity.

43.13.2 Anticipated noncompliance. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

43.13.3 Transfers. A permit is not transferable to any person except after notice to and written approval from the Department. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under Section 39.0.

43.13.4 Monitoring reports. Monitoring results shall be reported at the intervals specified in a permit.

43.13.5 Compliance schedules. Progress reports or reports of compliance or noncompliance with interim and final requirements contained in any compliance schedule of a permit shall be submitted no later than 14 days following each scheduled date.

43.13.6 Twenty-four (24) hour reporting. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances by calling DNREC's Enforcement Section's 24-hour Reporting Line at (800) 662-8802. A written submission shall also be provided within five (5) days of the time the permittee becomes aware of the circumstances. The written submission shall

contain a contact name and phone number; description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The submitted report shall also include the following, as a minimum:

43.13.6.1 Any monitoring or other information which indicates that any contaminant may pose a threat of contamination to an underground source of drinking water; or

43.13.6.2 Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between the underground sources of drinking water.

43.13.7 Other noncompliance. The permittee shall report all instances of noncompliance not reported under subsection 43.13, at the time monitoring reports are submitted. The reports shall contain the information listed in subsection 43.13.

43.13.8 Other information. Where the permittee becomes aware that he/she failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, the permittee shall promptly submit such facts or information.

43.13.9 Noncompliance notifications shall be submitted to the GWDS as follows: DNREC GWDS, 89 Kings Highway, Dover, DE 19901.

43.14 Requirements prior to commencing injection. A new injection well may not commence injection until construction is complete, and

43.14.1 The permittee has submitted a notice of completion of construction to the Department; and

43.14.2 The Department has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit.

43.15 The permittee shall notify the Department at such times as the permit or these regulations require before conversion or abandonment of the well.

43.16 All Class I permits and Major Class V permits (such as a project which discharges fluid through an underground source of drinking water) shall include conditions which meet the applicable requirements of Section 63.0 of these Regulations and the State of Delaware Regulations Governing the Construction and Use of Wells to ensure that plugging and abandonment of the well will not allow the movement of fluids into or between USDWs. Where the Department's review of an application indicates that the permittee's plan is inadequate, the Department may require the applicant to revise the plan, prescribe conditions meeting the requirements of this Section, or deny the permit. For purposes of this Section, temporary or intermittent cessation of injection operations is not abandonment.

43.17 Plugging and abandonment report. The report shall be certified as accurate by the person who performed the plugging operation, in accordance with the State of Delaware Regulations Governing the Construction and Use of Wells and these Regulations.

43.18 Duty to establish and maintain mechanical integrity.

43.18.1 The owner or operator of a Class I injection well shall establish mechanical integrity prior to commencing injection or on a schedule determined by the Department, and thereafter maintain mechanical integrity as defined in Section 61.0. The Department may require by written notice that the owner or operator comply with a schedule describing when mechanical integrity demonstrations shall be made.

43.18.2 When the Department determines that a Class I injection well lacks mechanical integrity pursuant to Section 61.0, the Department shall give written notice of the Department's determination to the owner or operator. Unless the Department requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the Department's determination. The Department may allow plugging of the well pursuant to the requirements of Section 63.0 or require the permittee to perform such additional construction, operation, monitoring, reporting, and corrective action as is necessary to prevent the movement of fluid into or between USDWs caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the Department that the owner or operator has demonstrated mechanical integrity pursuant to Section 61.0.

44.0 Establishing permit conditions

44.1 In addition to permit conditions required in Section 43.0 the Department may establish permit conditions as required on a case-by-case basis under Sections 44.0, 45.0, and 46.0. Permits for other wells shall contain the following requirements, when applicable.

44.1.1 Construction requirements as set forth in Part 146 (Sections 55.0-70.0). Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. No construction may commence until a permit has been issued containing construction requirements (see Section 23.0). New wells shall be in compliance with these requirements prior to commencing injection operations. Changes in construction plans during construction may be approved by the Department as minor modifications (Section 42.0). No such changes may be physically incorporated into construction of the well prior to approval of the modification by the Department.

44.1.2 Corrective action as set forth in Section 47.0.

44.1.3 Operation requirements as set forth in Part 146 (Sections 55.0-70.0).

44.1.4 The permit shall establish any maximum injection volumes and pressures necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with the Part 146 (Sections 55.0-70.0) operating requirements.

44.1.5 Monitoring and reporting requirements as set forth in Part 146 (Sections 55.0-70.0). The permittee shall be required to identify types of tests and methods used to generate the monitoring data.

44.1.6 After a cessation of operations of six (6) months, the Department may require the owner or operator to plug and abandon the well.

44.1.7 Financial responsibility.

44.1.7.1 The permittee, is required to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Department until:

44.1.7.1.1 The well has been plugged and abandoned in accordance with an approved plugging and abandonment plan pursuant to Section 63.0, and submitted a plugging and abandonment report pursuant to Section 63.0;

44.1.7.1.2 The well has been converted in compliance with the requirements of the DNREC's Water Supply Section; or

44.1.7.1.3 The transferor of a permit has received notice from the Department that the owner or operator receiving transfer of the permit, and the new permittee, has demonstrated financial responsibility for the well.

44.1.7.2 The permittee shall demonstrate financial responsibility to the Department by the submission of a surety bond, or other adequate assurance, such as a financial statement or other materials acceptable to the Department.

44.1.8 Mechanical integrity. A permit for any Class I well or injection project which lacks mechanical integrity shall include, and for any Class V well may include, a condition prohibiting injection operations until the permittee shows to the satisfaction of the Department under Section 61.0 that the well has mechanical integrity.

44.1.9 Additional conditions. The Department may impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water.

44.2 Additional Permit Requirements.

44.2.1 In addition to conditions required in all permits the Department shall establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of 7 Del.C. §6003; these Regulations; and SDWA and Parts 144, 145, 146 and 124.

44.2.2 When a permit is reopened at the discretion of the Department pursuant to Section 14.0 of these Regulations, an applicable requirement is also any requirement which takes effect prior to the modification or revocation and reissuance of a permit, to the extent allowed in Section 40.0. An applicable requirement is a State statutory or regulatory requirement which takes effect prior to final administrative disposition of the permit.

44.2.3 New or reissued permits, and to the extent allowed under Section 40.0 modified or revoked and reissued permits, shall incorporate each of the applicable requirements referenced in this section.

44.3 Incorporation. All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements shall be given in the permit.

44.4 All owners/operators are required to comply with all permit conditions. Any disputes or discrepancies regarding permit conditions must be resolved prior to initiation of injection activities. Such resolution may result in the issuance of a new permit.

45.0 Schedule of compliance

45.1 General. The permit may, when appropriate, specify a schedule of compliance leading to compliance with the SDWA and these Regulations.

45.1.1 Time for compliance. Any schedules of compliance shall require compliance as soon as possible, and in no case later than one (1) year after the effective date of the permit.

45.1.2 Interim dates. If a permit establishes a schedule of compliance which exceeds three (3) months from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.

45.1.2.1 The time between interim dates shall not exceed three (3) months.

45.1.2.2 If the time necessary for completion of any interim requirement is more than three (3) months and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

45.1.3 Reporting. The permit shall be written to require that if subsection 45.1.1 is applicable, progress reports must be submitted no later than 30 days following each interim date and the final date of compliance.

45.2 Alternative schedules of compliance. A permit applicant or permittee may cease conducting regulated activities (by plugging and abandonment) rather than continue to operate and meet permit requirements as follows:

45.2.1 If the permittee decides to cease conducting regulated activities at a given time within the term of a permit which has already been issued:

45.2.1.1 The permit may be modified to contain a new or additional schedule leading to timely cessation of activities; or

45.2.1.2 The permittee shall cease conducting permitted activities before noncompliance with any interim or final compliance schedule requirement already specified in the permit.

45.2.2 If the decision to cease conducting regulated activities is made before issuance of a permit whose term will include the termination date, the permit shall contain a schedule leading to termination which will ensure timely compliance with applicable requirements.

45.2.3 If the permittee is undecided whether to cease conducting regulated activities, the Department may issue or modify a permit to contain two (2) schedules as follows:

45.2.3.1 Both schedules shall contain an identical interim deadline requiring a final decision on whether to cease conducting regulated activities no later than a date which ensures sufficient time to comply with applicable requirements in a timely manner if the decision is to continue conducting regulated activities.

45.2.3.2 One schedule shall lead to timely compliance with applicable requirements.

45.2.3.3 The second schedule shall lead to cessation of regulated activities by a date which will ensure timely compliance with applicable requirements.

45.2.3.4 Each permit containing two schedules shall include a requirement that after the permittee has made a final decision under subsection 45.2.3.1, it shall follow the schedule leading to compliance if the decision is to continue conducting regulated activities, and follow the schedule leading to termination if the decision is to cease conducting regulated activities.

45.2.4 The applicant's or permittee's decision to cease conducting regulated activities shall be evidenced by a firm public commitment satisfactory to the Department, such as a resolution of the board of directors of a corporation.

45.3 The Department may extend the compliance deadline for specific wells for up to one (1) year if the most efficient compliance option for the well is connection to a sanitary sewer or installation of new treatment technology.

46.0 Requirements for recording and reporting of monitoring results

46.1 All permits shall specify:

46.1.1 Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods (including biological monitoring methods when appropriate); and

46.1.2 Applicable reporting requirements based upon the impact of the regulated activity and as specified in Part 146 (Sections 55.0-70.0). Reporting shall be no less frequent than specified in these regulations.

46.1.3 Required monitoring including type, intervals, and frequency sufficient to data which are representative of the monitored activity including, when appropriate, continuous monitoring.

46.2 Monitoring Reporting. Unless otherwise specified in the permit, signed reports/forms and field data shall be submitted to the Department at the following address:

Delaware DNREC

Groundwater Discharges Section/UIC Program

89 Kings Highway

Dover, DE 19901

47.0 Corrective action

47.1 Coverage. Applicants for Class I injection well permits shall identify the location of all known wells within the injection well's area of review which penetrate the injection zone, and all known wells within the area of review penetrating formations affected by the increase in pressure. For such wells which are improperly sealed, completed, or abandoned, the applicant shall also submit a plan consisting of such steps or modifications as are necessary to prevent movement of fluid into underground sources of drinking water (corrective action plan). Where the plan is adequate, the Department shall incorporate it into the permit as a condition. Where the Department's review of an application indicates that the permittee's plan is inadequate (based on the factors in Section 60.0), the Department shall require the applicant to revise the plan, prescribe a plan for corrective action as a condition of the permit under subsection 47.2, or deny the application.

47.2 Requirements:

47.2.1 Existing injection wells. Any permit issued for an existing injection well requiring corrective action shall include a compliance schedule requiring any corrective action accepted or prescribed under subsection 47.1 to be completed as soon as possible.

47.2.2 New injection wells. No owner or operator of a new injection well may begin injection until all required corrective action has been taken.

47.2.3 Injection pressure limitation. The Department may require as a permit condition that injection pressure be so limited that pressure in the injection zone does not exceed hydrostatic pressure at the site of any improperly completed or abandoned well within the area of review. This pressure limitation shall satisfy a corrective action requirement. Alternatively, such injection pressure limitation can be part of a compliance schedule and last until all other required corrective action has been taken.

48.0 General

The requirements described in these regulations are to protect underground sources of drinking water and are part of the Underground Injection Control (UIC) Program established under the Safe Drinking Water Act.

49.0 Class V Well Applicability

49.1 Sections 49.0-54.0 apply to person(s) who own or operate a Class V well (see Section 58.0 for well classes).

49.2 The following injection activities are Exempted, Prohibited, Authorized by Rule, Rule Authorized (letter), or require a UIC Permit:

49.2.1 Exempted from these UIC Regulations:

49.2.1.1 Non-residential on-site wastewater treatment and disposal systems (septics) which are used solely for the disposal of sanitary waste and have the capacity to serve fewer than 20 persons a day [see State of Delaware Regulations Governing the Design, Installation and Operation of On-site Wastewater Treatment and Disposal Systems];

49.2.1.2 Individual/residential home water treatment systems;

49.2.1.3 Floor drains or injection points that discharge air conditioning condensate only.

49.2.2 Prohibited injection activities:

49.2.2.1 Large capacity cesspools.

49.2.2.2 Class II, III, IV and VI Injection Wells.

49.2.2.3 Motor vehicle waste disposal wells (floor drains) in facilities which perform repairs or maintenance on engines, and are not connected to a POTW or an approved pretreatment unit (See Section 53.0).

49.2.2.4 Large capacity on-site wastewater treatment and disposal systems not designed, constructed or installed in accordance with the State of Delaware Regulations Governing the Design, Installation and Operation of On-site Wastewater Treatment and Disposal Systems.

49.2.2.5 Storm water structures not designed, constructed or installed in accordance with the State of Delaware Sediment and Stormwater Regulations.

49.2.2.6 Any injection activities not authorized by rule, receive a Rule Authorization letter or are permitted are prohibited.

49.2.2.7 Injection of hazardous fluids.

49.2.3 Authorized by Rule:

49.2.3.1 The following activities are authorized by rule without the need to submit separate documentation or application to the UIC Program. Violations of the UIC Regulations may result in the requirement to obtain a UIC Permit:

49.2.3.1.1 Stormwater structures designed, constructed and installed in accordance with State of Delaware Sediment and Stormwater Regulations.

49.2.3.1.2 Large capacity on-site wastewater treatment and disposal systems designed, constructed and installed in accordance with the State of Delaware Regulations Governing the Design, Installation and Operation of On-site Wastewater Treatment and Disposal Systems.

49.2.3.1.3 Air conditioning return flow wells, which contain no additives and returns the water to the aquifer in which it was withdrawn.

49.2.3.1.4 Open-loop geothermal return flow wells.

49.2.3.1.5 Steam condensate wells, which contain no additives.

49.2.4 Rule Authorization letter:

49.2.4.1 The following activities are Rule Authorized, and separate documentation or application will be required based on the injection activity:

49.2.4.1.1 Floor drains not located in an engine repair area.

49.2.4.1.2 Brine discharges from water treatment systems that treat less than 25,000 GPD of raw water.

49.2.4.1.3 Injection wells used to remediate contaminated soil or groundwater when the injection wells are approved as part of a DNREC-approved corrective action or remediation plan; approved remediation plan must document all injection activities.

49.2.5 Permits are required for these injection activities:

49.2.5.1 Aquifer Storage and Recovery wells.

49.2.5.2 Recharge wells used to replenish the water in an aquifer.

49.2.5.3 Remediation projects not conducted with the DNREC Tank Management Section or Site Investigation and Restoration Section.

49.2.5.4 Cooling water return wells.

49.2.5.5 Experimental injection well technologies.

49.2.5.6 Subsidence Control Wells.

49.2.5.7 Wick drains that direct fluid downward.

49.2.5.8 Lake Level Control wells.

49.2.5.9 Dry wells used for the injection of wastes into a subsurface formation.

49.2.5.10 Brine discharges from water treatment plans that are designed to provide 25,000 GPD or more of potable water.

49.2.5.11 Air conditioning return flow wells.

49.2.5.12 Subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water.

49.2.5.13 Injection wells associated with the recovery of geothermal energy for heating, aquaculture and production of electric power.

49.2.5.14 Salt water intrusion barrier wells used to inject water into a fresh aquifer to prevent the intrusion of salt water into the fresh water.

49.2.5.15 Any storm water infiltration system consisting of a drilled or driven shaft, or dug hole that is deeper than it is wide or includes any subsurface piping, which comes into contact with an unconfined aquifer.

49.2.5.16 Any other injection activity, not specifically identified in these Regulations, which may discharge a fluid directly into a USDW which may cause a release of a contaminant in excess of primary drinking water standards.

50.0 Protection of underground sources of drinking water

50.1 Owners and operators of Class V injection wells shall not allow the movement of fluids into any USDW that threatens or may threaten the USDW and must comply with Federal and State UIC requirements. Owners and operators of Class V injection wells must properly close the wells upon the completion of injection activities. You also must submit basic information about your well, as described in Section 51.0.

50.2 Prohibition of fluid movement.

50.2.1 As described in Section 24.0 the injection activity cannot allow the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of the primary drinking water standards under the State of Delaware Regulations Governing Public

Drinking Water Systems, or may otherwise adversely affect the health of a person or persons. This prohibition applies to well construction, operation, maintenance, conversion, plugging, closure, or any other injection activity.

50.2.2 If the Department learns that an injection activity may endanger one or more USDWs, the Department may require that the well be abandoned or require the owner/operator to obtain a permit or require other actions listed in Section 24.0.

50.3 Closure/Abandonment requirements. Owners/Operators must close the well in a manner that complies with the above prohibition of fluid movement. Also, Owners/Operators must dispose of or otherwise manage any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well in accordance with all applicable Federal, State, and local regulations and requirements.

50.4 Class V wells are subject to other UIC Program requirements in these Regulations. Most of the relevant requirements are repeated or referenced in this subpart for convenience.

51.0 Notification Requirements

51.1 At a minimum, Class V injection well owners/operators must provide inventory information regarding their Class V injection well(s) to the Department, within the specified time period.

51.2 Inventory requirements. In accordance with Section 30.0, owners/operators of Class V wells are required to submit information regarding the injection activities, in accordance with these regulations.

51.3 Required information shall include, but is not limited to, the following: Owners/operators of all types of Class V wells must submit at least the following information for each Class V well: facility name and location (including tax parcel number and latitude and longitude); name, phone number, physical or street address and mailing address of legal contact; ownership of facility; nature and type of injection well(s); and operating status of injection well(s). Providing this information does not preclude the need for a Fact Sheet as set forth in Section 9.0.

52.0 Permit Applicability

52.1 Class V wells may be Rule Authorized or approved by permit. The following Sections explain the conditions under which a Class V injection well may receive a Rule Authorization letter or approved by permit.

52.2 General Rule Authorization letter. A Class V injection activity, such as those listed in Section 49.0, may be Rule Authorized, meaning the owner/operator must comply with all the requirements of this subpart and the rest of the UIC Program, but an individual permit is not required. Well rule authorization letters are terminated upon proper well abandonment, as described in subsection 50.3.

52.3 Circumstances in which permits or other actions are required. An owner/operator performing one of the activities listed below must either obtain a permit or close the injection well.

52.3.1 Any Class V injection activity that is found to be out of compliance with a Rule Authorization letter.

52.3.2 Own or operate a Class V large-capacity cesspool (in which case, the owner/operator must close the well as specified in the additional requirements in subsection 53.1); new cesspools are prohibited.

52.3.3 Own or operate an Aquifer Storage and Recovery (ASR) well.

52.3.4 Own or operate a Class V well that discharges through a USDW.

52.3.5 The owner/operator is specifically required by the Department to obtain a permit, or the owner/operator is prohibited from injecting into the well upon:

52.3.5.1 Failure to submit a permit application in a timely manner as specified in a notice from the Department; or

52.3.5.2 Upon the effective date of permit denial.

52.3.6 The owner/operator has failed to submit inventory information to the Department, as described in Section 51.0 (in which case, the owner/operator is prohibited from injecting into the well until the inventory requirements are met).

52.3.7 Any Class V injection well that has not received a Rule Authorization letter.

53.0 Additional Requirements

53.1 Additional requirements for large-capacity cesspools statewide

53.1.1 At least 30 days prior to closure, the owner/operator must notify the UIC Program Manager of the intent to close the well.

53.1.2 Cesspools are to be properly abandoned in accordance with these Regulations, and the Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems.

53.1.3 All existing Large-Capacity Cesspools are to be abandoned, in accordance with the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems. See Section 54.0 regarding proper abandonment of a Class V well.

53.2 Additional Requirements for Motor Vehicle Waste Disposal Wells

53.2.1 Motor vehicle waste disposal wells (or drains) are prohibited, when not connected to a POTW or an approved pretreatment unit.

53.2.2 See Section 54.0 regarding proper abandonment of a Class V Well. The Department may extend the compliance deadline for specific motor vehicle waste disposal wells if the most efficient compliance option for the well is connection to a sanitary sewer within six (6) months.

54.0 Closure/Abandonment of Class V Injection Wells

54.1 The following describes the requirements for properly abandoning Class V injection wells.

54.2 Closure.

54.2.1 Prior to closing a Class V injection well, the owner/operator must plug or otherwise close the well in a manner that complies with the prohibition of fluid movement standard in Section 24.0 and summarized in Section 50.0. If the Department has any additional or more specific closure standards, the owner/operator must also meet those standards. The owner/operator also must dispose of or otherwise manage any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well in accordance with all applicable Federal, State, and local regulations and requirements, as in Section 50.0. All wells permitted by DNREC's Well Permits Branch must meet the State of Delaware Regulations Governing the Construction and Use of Wells abandonment requirements. All other wells or injection points must submit an abandonment report to the GWDS, specifically addressing compliance with the prohibition of fluid movement.

54.2.2 Closure/abandonment does not mean that operations must cease at the facility, only that the injection well(s) must be closed.

Part 146 - UIC Program: Criteria and Standards - Sections 55.0-70.0

55.0 Applicability and scope

55.1 This Part or Sections 55.0-70.0 set forth technical criteria and standards for the Underground Injection Control Program.

55.2 Any underground injection which is not authorized by rule, receives a Rule Authorized letter or issued a written Permit by the Department, is unlawful.

56.0 Law authorizing these regulations

Title 7 **Del.C.** §6003 authorizes these Regulations and all other UIC program regulations referenced in Sections 55.0-70.0.

57.0 Criteria for exempted aquifers

57.1 An aquifer or a portion thereof which meets the definition for an "underground source(s) of drinking water" in Section 4.0 may be determined to be an "exempted aquifer" if it meets the following criteria:

57.2 It does not currently serve as a source of drinking water;

57.3 It cannot now and will not in the future serve as a source of drinking water because:

57.3.1 It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical; or

57.3.2 It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption;

57.4 The total dissolved solids content of the Groundwater is more than 3,000 mg/L and less than 10,000 mg/L and it is not reasonably expected to supply a public water system; and

57.5 A major aquifer exemption has been approved by the U.S. Environmental Protection Agency.

58.0 Classification of injection wells

58.1 Injection wells are classified as follows: [note: some of these types of wells are prohibited in Delaware, including all Class II, III, IV, and VI injection wells]

58.2 Class I.

58.2.1 Wells used by generators, owners or operators of hazardous waste management facilities to inject hazardous waste beneath the lowermost aquifer containing, within one-quarter ($\frac{1}{4}$) mile of the well bore, an underground source of drinking water.

58.2.2 Industrial and domestic disposal wells which inject fluids beneath the lowermost aquifer containing, within one-quarter ($\frac{1}{4}$) mile radius of the well bore, an underground source of drinking water.

58.3 Class II {prohibited}. Wells which inject fluids:

58.3.1 Which are brought to the surface in connection with natural gas storage or conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection.

58.3.2 For enhanced recovery of oil or natural gas.

58.3.3 For storage of hydrocarbons which are liquid at standard temperature and pressure.

58.4 Class III {prohibited}. Wells which inject for extraction of minerals including:

58.4.1 Mining of sulfur by the Frasch process;

58.4.2 In situ production of uranium or other metals. This category includes only in-situ production from ore bodies which have not been conventionally mined. Solution mining of conventional mines such as stopes leaching is included in Class V.

58.4.3 Solution mining of salts or potash.

58.5 Class IV {prohibited}.

58.5.1 Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste into a formation which contains an underground source of drinking water within one-quarter ($\frac{1}{4}$) mile of the well.

58.5.2 Wells used by generators of hazardous waste or of radioactive waste, by owners or operators of hazardous waste management facilities, or by owners or operators of radioactive waste disposal sites to dispose of hazardous waste or radioactive waste above a formation which contains an underground source of drinking water within one-quarter ($\frac{1}{4}$) mile of the well.

58.5.3 Wells used by generators of hazardous waste or owners or operators of hazardous waste management facilities to dispose of hazardous waste, which cannot be classified under this Section (e.g., wells used to dispose of hazardous wastes into or above a formation which contains an aquifer which has been exempted pursuant to Section 57.0).

58.6 Class V. Injection wells not included in Class I, II, III, IV or VI. Typically, Class V wells are shallow wells used to place a variety of fluids directly below the land surface. However, if the fluids placed in the ground qualify as a hazardous waste under the Resource Conservation and Recovery Act (RCRA), the well is either a Class I or Class IV well, not a Class V well. Examples of Class V wells include, but are not limited to:

58.6.1 Air conditioning return flow wells used to return to the supply aquifer the water used for heating or cooling in a heat pump.

58.6.2 Cooling water return flow wells used to inject water previously used for cooling, which contain no additives.

58.6.3 Drainage wells used to discharge or inject surface fluid, primarily storm runoff, directly into a USDW.

58.6.4 Recharge wells used to replenish the water in an aquifer.

58.6.5 Salt water intrusion barrier wells used to inject potable water into a fresh water aquifer to prevent the intrusion of salt water into the fresh water.

58.6.6 Sand backfill and other backfill wells used to inject a mixture of water and sand, mill tailings or other solids into mined-out portions of subsurface mines whether what is injected is a radioactive waste or not.

58.6.7 Septic system wells used to inject the waste or effluent from a multiple dwelling, business establishment, or community septic tank. The UIC requirements do not apply to single family residential septic system wells, or to non-residential septic system wells which are used solely for the disposal of sanitary waste and have the capacity to serve fewer than 20 persons a day; see also the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems.

58.6.8 Subsidence control wells (not used for the purpose of oil or natural gas production) used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water.

58.6.9 Injection wells associated with the recovery of geothermal energy for heating, aquaculture and production of electric power.

58.6.10 Experimental injection well technologies.

58.6.11 Aquifer Storage and Recovery (ASR) wells.

58.7 Class VI {prohibited}. Injection wells used to inject Carbon Dioxide (CO₂) for long-term storage, also known as Geologic Sequestration of CO₂.

59.0 Area of review

59.1 The area of review for each injection well shall be determined according to this Section. The Department may solicit input from other technical professionals to determine which method is most appropriate for each geographic area. The area of review may be determined by fixed radius only after the GWDS has calculated or approved the radius to be used.

59.2 Zone of endangering influence: The zone of endangering influence shall be determined in accordance with a submitted methodology that has been reviewed and approved by the GWDS, and 40 CFR Part 146 §146.6(a)(1) and §146.6(a)(2).

59.3 Fixed radius.

59.3.1 In the case of application(s) for an individual injection well permit(s), a fixed radius around the well of not less than one-fourth (¼) mile may be used.

59.3.2 In determining the fixed radius, the following factors shall be taken into consideration:

Chemistry of injected and formation fluids; hydrogeology; population and ground-water use and dependence; and historical practices in the area.

59.4 If the area of review is determined by a mathematical model pursuant to subsection 59.2, the permissible radius is the result of such calculation even if it is less than one-fourth (¼) mile.

59.5 The GWDS may require that a radius of influence be calculated. The radius of influence may be determined based on aquifer characteristics, screen length (if applicable), depth to injection, injection pressure and other factors concerning the characteristics of the injection fluid.

60.0 Corrective action

60.1 In determining the adequacy of corrective action proposed by the applicant under Section 47.0 and in determining the additional steps needed to prevent fluid movement into underground sources of drinking water, the following criteria and factors shall be considered by the Department:

60.1.1 Nature and volume of injected fluid;

60.1.2 Nature of native fluids or by-products of injection;

60.1.3 Potentially affected population;

60.1.4 Geology;

60.1.5 Hydrology;

60.1.6 History of the injection operation;

60.1.7 Completion and plugging records;

60.1.8 Abandonment procedures in effect at the time the well was abandoned;

60.1.9 Hydraulic connections with underground sources of drinking water;

60.1.10 Aquifer use; and

60.1.11 Potential impact to USDW.

61.0 Mechanical integrity

61.1 These provisions shall apply to all Class I wells.

61.1.1 An injection well has mechanical integrity if:

61.1.1.1 There is no significant leak in the casing, tubing or packer, as verified by required tests; and

61.1.1.2 There is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.

61.1.2 One of the following methods must be used to evaluate the absence of significant leaks under subsection 61.1.1.1:

61.1.2.1 Following an initial pressure test, monitoring of the tubing-casing annulus pressure with sufficient frequency to be representative, as determined by the Director, while maintaining an annulus pressure different from atmospheric pressure measured at the surface; or

61.1.2.2 Pressure test of inner casing or tubing with liquid or gas.

61.1.3 The following methods shall be used to determine the absence of fluid movement under subsection 61.1.1.2:

61.1.3.1 The results of a temperature or noise log, and

61.1.3.2 A radioactive tracer survey. The radioactive tracer survey shall not be required by the Department if such testing may pose a threat to an underground source of drinking water.

61.1.4 The Department shall allow the use of a test to demonstrate mechanical integrity, other than those listed in subsections 61.1.2 and 61.1.3, if the applicant has sought and obtained the written approval of the DNREC and the EPA. If the EPA has published in the Federal Register an alternative mechanical integrity test method, only written Department approval shall be required before conducting alternative mechanical integrity tests other than those specified in subsections 61.1.2 and 61.1.3.

61.1.5 A pressure test required under subsection 61.1.2 shall be conducted with a liquid at a minimum pressure of 1.5 times the maximum pressure at which the well is to be permitted, or 50 psi, whichever is higher, for at least one (1) hour. Internal mechanical integrity under subsection 61.1.1 is demonstrated if there is no more than a five-percent (5%) pressure change over the one-hour test period. The pressure used to test wells constructed using tubing and packer shall not exceed the design specifications of the tubing or packer.

61.1.6 A Radioactive Tracer Test required under subsection 61.1.3 shall be performed in accordance with one of the methods published by the EPA in the Federal Register and EPA technical documents. The permittee shall submit a Radioactive Tracer Test Plan for Department approval prior to performing the test, and shall arrange to perform the test with a Department representative on site.

61.1.7 In conducting and evaluating the tests enumerated in this Section or others to be allowed by the Department, the owner or operator and the Department shall apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Department, such report shall include a description of the test(s), the method(s) used, and the interpretation of the results. In making the evaluation, the Department shall review monitoring and other test data submitted since the previous evaluation.

61.1.8 The Department shall require additional or alternative mechanical integrity tests in accordance with this Section.

61.1.9 A permit for any Class I or injection project which lacks mechanical integrity shall include, and for any Class V well may include, a condition prohibiting injection operations until the permittee affirmatively demonstrates under subsections 61.1.1 through 61.1.3, that the well has mechanical integrity, or the permittee affirmatively demonstrates that there is no movement of fluid into or between underground sources of drinking water.

61.1.10 Prior to making a formal determination regarding an injection well, the Department may consult with outside technical professionals including, but not limited to, the following: representatives from the Department's offices, the Delaware Geological Survey, local environmental programs, the United States Geological Survey (USGS) and the EPA.

61.1.11 The Department may require additional or alternative tests if the results presented by the owner or operator are not satisfactory to the Department to demonstrate that there is no movement of fluid into or between USDWs resulting from the injection activity.

62.0 Criteria for establishing permitting priorities

62.1 In determining priorities for setting times for owners or operators to submit applications for authorization to inject under the procedures of Section 32.0, the Department shall base these priorities upon consideration of the following factors:

62.1.1 Injection wells known or suspected to be contaminating underground sources of drinking water;

62.1.2 Injection wells known to be injecting fluids containing hazardous contaminants;

62.1.3 Likelihood of contamination of underground sources of drinking water;

62.1.4 Potentially affected population;

62.1.5 Injection wells violating existing State requirements;

62.1.6 Coordination with the issuance of permits required by other State or Federal permit programs;

62.1.7 Age and depth of the injection well; and

62.1.8 Expiration dates of existing permits, if any.

63.0 Plugging and abandoning Class I and Major Class V wells

63.1 Requirements for Class I and Major Class V wells.

63.1.1 Prior to abandoning Class I and Major Class V wells, the well shall be plugged with Portland cement in a manner which will not allow the movement of fluids either into or between underground sources of drinking water.

63.1.2 Placement of Portland cement shall conform to the State of Delaware Regulations Governing the Construction and Use of Wells, or an alternative method approved by the Department, which will reliably provide a comparable level of protection to underground sources of drinking water.

63.1.3 All wells shall be filled with the appropriate sealing or fill materials starting from the bottom of the well upward to the ground surface, except as noted in State of Delaware Regulations Governing the Construction and Use of Wells, or unless otherwise approved by the Department.

63.1.4 The Department may prescribe aquifer cleanup and monitoring where the Department deems it necessary and feasible to insure adequate protection of USDWs.

63.2 Requirements for Major Class V wells.

63.2.1 Prior to abandoning a Major Class V well, the owner or operator shall close the well in a manner that prevents the movement of fluid containing any contaminant into an underground source of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under Delaware regulations or may otherwise adversely affect the health of any person or persons. Closure requirements for motor vehicle waste disposal wells and large-capacity cesspools are stated in Section 53.0 and Section 54.0.

63.2.2 The owner or operator shall dispose of or otherwise manage any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well in accordance with all applicable Federal, State, and local regulations and requirements.

63.2.3 All wells are to be properly abandoned in accordance with the State of Delaware Regulations Governing the Design, Installation and Operation of On-Site Wastewater Treatment and Disposal Systems and the Regulations Governing the Construction and Use of Wells, where applicable.

64.0 Criteria and standards applicable to Class I non-hazardous wells

Sections 55.0-70.0 establish the criteria and standards for underground injection control programs to regulate Class I non-hazardous wells, as well as any Class V well that injects through or directly into a USDW.

65.0 Construction requirements for Class I non-hazardous wells

65.1 All Class I wells shall be sited in such a fashion that they inject into a formation which is beneath the lowermost formation containing an underground source of drinking water within one-quarter ($\frac{1}{4}$) mile of the well bore.

65.2 All Class I wells shall be cased and cemented to prevent the movement of fluids into or between underground sources of drinking water. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well and shall be new and unused for Class I wells. The number, thickness, type of materials, and length of casing shall be sufficient to protect the quality of drinking water resources and the integrity of the well and the confining strata. The final string of casing shall be made of seamless mild steel pipe having a minimum 0.500 inch wall thickness. An applicant who proposes to use pipe composed of other than 0.500 inch wall seamless mild steel for the final casing shall demonstrate that the proposed material and thicknesses will not compromise the integrity or operation of the well. All casing shall be consistent with the standards of the American Petroleum Institute Specification 5CT or American Society of Testing and Materials standard ASTM A53 / A53M - 12 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless. In determining and specifying casing and cementing requirements, the following factors shall be considered:

65.2.1 Depth to the injection zone;

65.2.2 Injection pressure, external pressure, internal pressure, and axial loading;

65.2.3 Hole size;

65.2.4 Size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, and construction material);

65.2.5 Corrosiveness of injected fluid, formation fluids, and temperatures;

65.2.6 Lithology of injection and confining intervals; and

65.2.7 Type or grade of cement.

65.3 All Class I injection wells shall inject fluids through tubing with a packer set immediately above the injection zone, or tubing with an approved fluid seal as an alternative. The tubing, packer, and fluid seal shall be designed for the expected service.

65.3.1 The use of other alternatives to a packer may be allowed with the written approval of the Department. To obtain approval, the operator shall submit a written request to the Department, which shall set forth the proposed alternative and all technical data supporting its use. The Department may approve the request if the alternative method will reliably provide a comparable level of protection to underground sources of drinking water. The Department may approve an alternative method solely for an individual well or for general use.

65.3.2 In determining and specifying requirements for tubing, packer, or alternatives the following factors shall be considered:

65.3.2.1 Depth of setting;

65.3.2.2 Characteristics of injection fluid (chemical content, corrosiveness, and density);

65.3.2.3 Injection pressure;

65.3.2.4 Annular pressure;

65.3.2.5 Rate, temperature and volume of injected fluid; and

65.3.2.6 Size of casing.

65.4 Appropriate logs and other tests shall be conducted during the drilling and construction of new Class I wells. A descriptive report interpreting the results of such logs and tests shall be prepared by a knowledgeable log analyst and submitted to the Department. At a minimum, such logs and tests shall include:

65.4.1 Deviation checks on all holes constructed by first drilling a pilot hole, and then enlarging the pilot hole by reaming or another method. Such checks shall be at sufficiently frequent intervals to assure that vertical avenues for fluid migration in the form of diverging holes are not created during drilling.

65.4.2 Such other logs and tests as may be needed after taking into account the availability of similar data in the area of the drilling site, the construction plan, and the need for additional information, which may arise from time to time as the construction of the well progresses. In determining which logs and tests shall be required, the following logs shall be considered for use in the following situations:

65.4.2.1 For surface casing intended to protect underground sources of drinking water:

65.4.2.1.1 Resistivity, spontaneous potential, and caliper logs before the casing is installed; and

65.4.2.1.2 A cement bond, acoustic cement evaluation log, or density log after the casing is set and cemented.

65.4.2.2 For intermediate and long strings of casing intended to facilitate injection:

65.4.2.2.1 Resistivity, spontaneous potential, porosity, and gamma ray logs before the casing is installed; and

65.4.2.2.2 A cement bond, acoustic cement evaluation log, or density log after the casing is set and cemented.

65.5 At a minimum, the following information concerning the geologic formation shall be determined or calculated for new Class I wells:

65.5.1 Identification of the lowermost USDW. The applicant will be required to identify the base of the lowermost USDW at the injection well location. During construction, the applicant shall conduct tests

and collect water samples, as needed, to identify the depth at which the TDS concentration of the aquifer exceeds 10,000 ppm. This demonstration shall be made using water samples, geophysical logs, drilling records and drill cuttings.

65.5.2 Demonstration of Confinement. The applicant shall conduct logging and testing as needed to demonstrate that the injected fluid will not migrate from the injection zone either vertically or horizontally into a USDW. The geologic layers overlying the injection aquifer shall serve as confining layers, preventing the upward movement of injected fluids into a USDW. Confinement shall be demonstrated using the appropriate geophysical logs, drilling records, cutting samples and core samples. Core samples shall be analyzed in a laboratory for porosity and vertical hydraulic conductivity.

65.5.3 Selection of Monitoring Zones. The applicant shall be required to monitor in the vicinity of the injection well bore for upward movement of injected fluid. During construction, the applicant shall identify at least two (2) monitoring zones. One zone shall be at the base of the lowermost USDW, and the second will be an early-warning monitor zone below the lowermost USDW and above the primary confining unit. The monitoring zones must have adequate water production to allow periodic sampling, and the applicant shall identify the zones and provide technical justification for their selection using drilling records, cutting samples and geophysical logs.

65.5.4 Characteristics of the Injection Formation:

65.5.4.1 Fluid pressure;

65.5.4.2 Temperature;

65.5.4.3 Fracture pressure;

65.5.4.4 Other physical and chemical characteristics of the injection matrix; and

65.5.4.5 Physical and chemical characteristics of the formation fluids.

65.6 In addition to complying with these regulations, all injection wells must be constructed in a manner that is in accordance with the State of Delaware Regulations Governing the Construction and Use of Wells.

65.7 For Class I injection well permit approval, reasonable assurance is required that the project will function in compliance with these Regulations. Prior to applying for a Class I injection well permit, an exploratory well must be drilled and documented on the project site. The Department shall require an exploratory well for projects located in an area where available information concerning geologic or hydraulic confinement is deficient; or where existing information indicates that geologic or hydraulic confinement may be poor or incomplete (See Section 68.0).

66.0 Operating, monitoring and reporting requirements for Major Class V Injection Wells, Class V Injection Wells that inject into a confined aquifer and all Class I Injection Wells

66.1 Operating requirements. Operating requirements shall, at a minimum, specify the following:

66.1.1 Except during stimulation, injection pressure at the wellhead shall not exceed a maximum, which shall be calculated, so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone. In no case shall injection pressure initiate fractures in the confining zone or cause the movement of injection or formation fluids into an underground source of drinking water.

66.1.2 Injection between the outermost casing protecting underground sources of drinking water and the well bore is prohibited.

66.1.3 For Class I injection wells, unless an alternative to a packer has been approved under Section 65.0, the annulus between the tubing and the long string of casings shall be filled with a fluid approved by the Department and a pressure, also approved by the Department, shall be maintained on the annulus.

66.2 Monitoring requirements for Major Class V Injection Wells, Class V that inject into a confined aquifer and all Class I Injection Wells. Monitoring requirements shall, at a minimum, include:

66.2.1 The analysis of the injected fluids with sufficient frequency to yield representative data of their characteristics;

66.2.2 Installation and use of continuous recording devices to monitor injection pressure, flow rate and volume, and the pressure on the annulus between the tubing and the long string of casing;

66.2.3 A demonstration of mechanical integrity pursuant to Section 61.0 at least once every three (3) years during the life of the well; and

66.2.4 The type, number and location of wells within the area of review to be used to monitor any migration of fluids into and pressure in the underground sources of drinking water, the parameters to be measured, and the frequency of monitoring.

66.2.5 Monitoring.

66.2.5.1 Monitoring of the injection zone: At a minimum, the permittee is required to monitor the pressure buildup in the injection zone annually, including at a minimum, a shut-down of the well for a time period sufficient to conduct a valid observation of the pressure fall-off curve.

66.2.5.2 Groundwater monitoring for Class I injection wells: When prescribing a monitoring system, the permittee shall also be required to monitor wells above the injection zone near the injection well, field or project.

66.2.5.2.1 The permittee shall be able to monitor the following:

66.2.5.2.1.1 The absence of fluid movement adjacent to the well bore, and;

66.2.5.2.1.2 The long-term effectiveness of the confining zone.

66.2.5.2.2 Monitor wells used to meet the requirements of subsection 66.2.5.2.1 shall be sampled periodically. The frequency of sampling and constituents to be analyzed shall be specified in the permit and shall be representative of the monitored activity.

66.2.5.2.3 Monitor wells used to meet the requirements of subsection 66.2.5.2.1.1 (above) shall be located within 150 feet of the injection well unless the applicant can demonstrate, through a hydro-geologic study, that a monitor well located at a greater distance will be capable of adequately monitoring fluid movement adjacent to the borehole.

66.2.5.2.4 For Class I wells, the permittee shall monitor a zone below the base of the underground source of drinking water, if a zone is available, and at least one zone within, and near the base of, the underground source of drinking water.

66.2.5.2.5 The Department may also require any of the following when needed to provide reasonable assurance that the requirements of subsection 66.2.5.2 are being met:

66.2.5.2.5.1 Continuous monitoring for pressure changes in the first aquifer overlying the confining zone.

66.2.5.2.5.2 Continuous monitoring for pressure changes in any monitor well constructed under subsection 66.2.5.2.5.1, above,

66.2.5.2.5.3 Periodic (minimum of quarterly) monitoring of groundwater quality in the first aquifer overlying the injection zone,

66.2.5.2.5.4 Periodic monitoring of groundwater quality in the lowermost underground source of drinking water.

66.2.5.2.5.5 Periodic additional monitoring to determine whether fluid movement caused by underground injection activity is occurring into or between underground sources of drinking water.

66.2.5.2.5.6 The use of indirect, geophysical techniques to determine the position of the waste front, the water quality in a formation designated by the Department, or to provide other site specific data.

66.2.5.2.5.7 Periodic monitoring of groundwater quality in the injection zone.

66.2.5.2.6 Any additional monitoring necessary to determine whether fluids are moving into or between USDWs.

66.3 Reporting requirements. Reporting requirements shall, at a minimum, include:

66.3.1 Quarterly reports to the Department describing:

66.3.1.1 The physical, chemical and other relevant characteristics of injection fluids;

66.3.1.2 Monthly average, maximum and minimum values for injection pressure, flow rate and volume, annular pressure; and

66.3.1.3 The results of monitoring prescribed under subsection 66.2.4.

66.3.2 The first quarterly report after the completion of the monitoring shall include the following (at a minimum):

66.3.2.1 Periodic tests of mechanical integrity;

66.3.2.2 Any other test of the injection well conducted by the permittee if required by the Department; and

66.3.2.3 Any well work/maintenance (including repairs).

67.0 Information to be considered by the Department

67.1 This Section sets forth the information which shall be considered by the Department in authorizing Class I wells or Major Class V wells. For an existing or converted new Class I or Major Class V well, the Department may rely on the existing permit file for those items of information listed below which are current and accurate in the file. For a newly drilled Class I or Major Class V well, the Department shall require the submission of all the information listed below. For both existing and new Class I or Major Class V wells, certain maps, cross-sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current, are readily available to the Department and to the Applicant or Permittee, and are sufficiently identified to be retrieved.

67.2 Prior to the issuance of a permit for an existing Class I or Major Class V well to operate or the construction or conversion of a new Class I or Major Class V well the Department shall consider the following:

67.2.1 Information required in Section 32.0;

67.2.2 A map showing the injection well(s) for which a permit is sought and the major area of review.

Within the area of review, the map must show the number, or name, and location of all production wells, dry holes, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;

67.2.3 A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled,

location, depth, record of plugging and completion, and any additional information the Department may require;

67.2.4 Maps and cross-sections indicating the general vertical and lateral limits of all underground sources of drinking water within the area of review, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection;

67.2.5 Maps and cross-sections detailing the geologic structure of the local area;

67.2.6 Generalized maps and cross-sections illustrating the regional geologic setting;

67.2.7 Proposed operating data:

67.2.7.1 Average and maximum daily rate and volume of the fluid to be injected;

67.2.7.2 Average and maximum injection pressure; and

67.2.7.3 Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids;

67.2.8 Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the receiving formation;

67.2.9 Proposed stimulation program;

67.2.10 Proposed injection procedure;

67.2.11 Schematic or other appropriate drawings of the surface and subsurface construction details of the well.

67.2.12 Contingency plans to cope with all shut-ins or well failures so as to prevent migration of fluids into any underground source of drinking water;

67.2.13 Plans (including maps) for meeting the monitoring requirements in subsection 66.2;

67.2.14 For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under Section 47.0;

67.2.15 Construction procedures including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing, and coring program; and

67.2.16 A certificate that the applicant has assured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well.

67.3 Prior to granting approval for the plugging and abandonment of a Class I or Major Class V well the Department shall consider the following information:

67.3.1 The type and number of plugs to be used;

67.3.2 The placement of each plug including the elevation of the top and bottom;

67.3.3 The type, grade and quantity of cement to be used;

67.3.4 The method for placement of the plugs; and

67.3.5 The procedure to be used to meet the requirement of Section 63.0.

68.0 Exploratory Wells

68.1 A permit to construct an exploratory well into a USDW shall be denied by the Department if the construction of the well itself will be a source of pollution as defined in 7 Del.C. §6002 or any amending or superseding legislation. If the construction of the well itself is not a source of pollution, the permit shall be issued with conditions to meet the requirements of subsections 68.3 through 68.7 below.

68.2 An exploratory well under the Underground Injection Control Program is drilled for the specific purpose of obtaining information to determine the feasibility of underground injection at the proposed site. An exploratory well may be required, based on available geological and physical data.

68.3 At a minimum, the exploratory well tests shall be designed to determine the groundwater quality profile and make a preliminary assessment of the adequacy of the confining interval and injection zone potential.

68.4 The information provided with the application to construct and test an exploratory well shall include, but is not limited to, the following:

68.4.1 Plan of the injection project;

68.4.2 Well inventory as described in Area of Review (Section 59.0);

68.4.3 Proposed future use of the exploratory well;

68.4.4 Drilling and testing plan for the exploratory well;

68.4.5 Source and composition of any fluids to be used for injection testing; and

68.4.6 An abandonment plan.

68.5 Injection testing.

68.5.1 The permittee may conduct injection tests under the exploratory well program, for such time requested by the permittee, not to endanger the underground sources of drinking water, and approved by the Department subject to the provisions of subsection 68.4.2.

68.5.2 The exploratory well shall be constructed and tested so that it is in compliance with the Permitting Process (Section 5.0). The use of treated or untreated municipal (domestic) or industrial effluent, or reverse osmosis concentrate is prohibited for injection testing conducted under the exploratory testing program.

68.6 An exploratory well may be reclassified to a monitor well if the appropriate permits have been obtained; otherwise, the exploratory well must be properly plugged and abandoned. An exploratory well may be reclassified as a Class I test injection well or a Class V well if the appropriate permits have been obtained. If the applicant intends to apply for a permit to reclassify an exploratory well to a Class I test injection well, the exploratory well shall be constructed to meet the minimum Class I well construction standards contained in these regulations and the State of Delaware Regulations Governing the Construction and Use of Wells.

68.7 The Department shall perform at its discretion, periodic inspections at certain stages of the approved construction activities.

69.0 Class I and Major Class V Test Injection Well Construction and Operation Requirements

69.1 General.

69.1.1 The Department shall deny a construction permit if construction of the well itself may be a source of pollution.

69.1.2 A test injection well will be required, and may be used as an injection well, with approval by the Department. Upon completion of required testing, the applicant may apply for an operating permit, to convert the test well to an operational well.

69.1.3 For Class I injection well operation, reasonable assurance is required that the project will function in compliance with these regulations. The Department shall require a test injection well for all Class I injection well facilities. The Department may require a test well for Major Class V injection well facilities. A Department-approved injection test must be performed on each test well.

69.1.4 For a Class I injection well, issuance of a permit does not obligate the Department to authorize any operation of the well, unless reasonable assurance has been provided that the well can operate in compliance with these regulations.

69.1.5 Prior to granting approval for the operation of a Class I or Major Class V well the Department shall consider the following information:

69.1.5.1 All available logging and testing program data on the well;

69.1.5.2 A demonstration of mechanical integrity pursuant to Section 61.0;

69.1.5.3 The anticipated maximum pressure and flow rate at which the permittee will operate;

69.1.5.4 The results of the formation testing program;

69.1.5.5 The actual injection procedure;

69.1.5.6 The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone;

69.1.5.7 The status of corrective action on defective wells in the area of review; and

69.1.5.8 Potential impact on a USDW.

69.2 Information Requirements. Information to be submitted with the application for a permit to construct a test injection well shall include but is not limited to the following:

69.2.1 A map showing the location of the proposed injection wells or well field area for which a permit is sought and the applicable area of review. Within the area of review, the map shall show the number or name, and location of all production wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water systems, mines (surface and subsurface), water wells and other pertinent surface features including residences and roads. The map shall also show geological faults, if known or suspected. Only information of public record and, in addition, pertinent information known to the applicant is required to be included on this map;

69.2.2 A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone, confining zone, or proposed monitoring zone. Such data shall include a description of each well's type, well construction data, date drilled, location, depth, record of plugging or completion, and any additional information in the applicant's possession about the potential for fluids to migrate into, or in the direction of, an underground source of drinking water;

69.2.3 Maps and cross sections indicating the general vertical and lateral limits within the area of review of all underground sources of drinking water, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection;

69.2.4 Maps and cross sections detailing the hydrology and geologic structures of the local area;

69.2.5 Generalized maps and cross sections illustrating the regional geologic setting;

69.2.6 Proposed operating data.

69.2.6.1 Average and maximum daily rate and volume of the fluid to be injected;

69.2.6.2 Average and maximum injection pressure; and

69.2.6.3 Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids (injectate). For Class I wells injecting domestic effluent, a demonstration that the effluent quality meets the standards at all times (secondary treatment). For all other Class I wells, a demonstration that the effluent quality is not a hazardous waste.

69.2.7 Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the injection zone;

69.2.8 Proposed stimulation program;

69.2.9 Proposed injection procedure;

69.2.10 Engineering drawings of the surface and subsurface construction details of the system, including design features for surge control and water hammer protection;

69.2.11 Contingency plans to cope with all shut-ins or well failures, or to prevent migration of fluids into an underground source of drinking water, including emergency discharge provisions;

69.2.12 Plans (including maps) and proposed monitoring data to be reported for meeting the monitoring requirements in these regulations;

69.2.13 For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under Corrective Action;

69.2.14 Construction procedures including a cementing and casing program, logging procedures, deviation checks, and a drilling, testing and coring program; and

69.2.15 A certificate that the applicant has ensured, through a performance bond or other appropriate means as required by financial responsibility, the resources necessary to close, plug or abandon the well.

69.3 Operational Testing.

69.3.1 For Class I test injection wells, the permit includes a period of temporary injection operation for the purposes of long term testing, to determine potential fluid migration. Prior to commencement of operational testing:

69.3.1.1 Construction of the injection well shall be complete and the permittee shall submit an engineer's Notice of Completion of Construction to the Department;

69.3.1.2 Each well shall first be tested for integrity of construction, and shall be followed by a short term injection test of such duration to allow for the prediction of the operating pressure;

69.3.1.3 The permittee shall submit the following information:

69.3.1.3.1 A copy of the borehole television survey(s);

69.3.1.3.2 Geophysical logs; and

69.3.1.3.3 Mechanical integrity test data;

69.3.1.4 Data obtained during the short term injection testing conducted pursuant to subsection 69.3.1.2;

69.3.1.5 Confining zone data;

69.3.1.6 Background water quality data for the injection and monitor zones;

69.3.1.7 Waste-stream analysis;

69.3.1.8 As-built well construction specifications; and

69.3.1.9 Other data obtained during well construction which demonstrates that the well will operate in compliance with these regulations.

69.3.2 The emergency discharge method (subsection 69.2.11) shall be fully operational and no emergency discharge shall occur until the permittee has obtained all necessary Department permits.

69.3.3 Any corrective action required under Corrective Action, shall be completed.

69.3.4 Prior to granting approval for operational testing of a Class I well, the Department shall consider the following information:

69.3.4.1 All available logging and testing program data on the well;

69.3.4.2 A demonstration of mechanical integrity pursuant to Mechanical Integrity;

69.3.4.3 The anticipated maximum pressure and flow rate at which the permittee will operate;

69.3.4.4 The results of the formation testing program;

69.3.4.5 The actual injection procedure;

69.3.4.6 The compatibility of injectate with fluids in the injection zone and minerals in both the injection zone and the confining zone;

69.3.4.7 The status of corrective action on defective wells in the area of review; and

69.3.4.8 The information submitted to the Department under subsection 69.2.

69.3.5 Written authorization for operational testing shall be obtained from the Department.

Authorization shall be for up to two (2) years or until the expiration date of the Class I test injection well permit, whichever time period is shorter, and is nonrenewable. The authorization shall specify the conditions under which operational testing is approved. The authorization shall include, but is not limited to, the following:

69.3.5.1 Injection pressure limitation;

69.3.5.2 Injection flow rate limitation;

69.3.5.3 Injection well monitoring requirements;

69.3.5.4 Effluent monitoring requirements;

69.3.5.5 Weekly groundwater sampling of monitor wells;

69.3.5.6 Monthly specific injectivity testing;

69.3.5.7 Reporting requirements; and

69.3.5.8 An expiration date for the operational testing period not to exceed two (2) years.

69.3.6 Before authorizing operational testing, the Department shall conduct an inspection of the facility to determine if the conditions of the permit have been met.

69.3.7 If requested by the permittee, the Department shall allow a modified sampling schedule, after a minimum of six (6) months of operational testing, if the data indicate that the parameter values have stabilized. However, a sampling frequency of less than once per month shall not be allowed.

69.3.8 For Class I injection wells, the duration of the operational testing period shall not exceed two (2) years or the expiration date of the construction permit, whichever is less. If the Department has not issued an intent to issue an operation permit for the injection well(s) by the end of the operational testing period, the permittee shall cease injection.

69.3.9 For a Class I injection well, if an operation permit has not been obtained for the well within two (2) years after the cessation of operational testing, the permittee shall submit an application to the Department on form "Well Abandonment Application" to plug and abandon the well.

69.4 Class I and Major Class V - Injection Well Operation Permit.

69.4.1 General Requirements.

69.4.1.1 An underground injection control permit shall be obtained for each Class I or Major Class V injection well. For multi-well injection systems, a separate UIC permit application need not be submitted for each well.

69.4.1.2 Copies of mill certificates for casing used in the well(s) construction. The owner shall retain the original records.

69.4.2 Prior to granting approval for the operation of a Class I or Major Class V well, the Department shall consider the following information which, for Class I or major Class V wells, was obtained during construction and operational testing under the construction permit:

69.4.2.1 All available logging and testing program data and construction data on the well or well field;

- 69.4.2.2 A satisfactory demonstration of mechanical integrity for all new Class I wells pursuant to Section 61.0;
- 69.4.2.3 The actual operating data, where feasible, or the anticipated maximum pressure and flow rate at which the permittee will operate the well;
- 69.4.2.4 The results of the formation testing program;
- 69.4.2.5 The actual injection procedure;
- 69.4.2.6 For Class I or Major Class V wells, the compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone; and
- 69.4.2.7 The status of corrective action on defective wells in the area of review;
- 69.4.3 Renewal of the Operation of Class I or Major Class V Wells.
- 69.4.3.1 The permittee shall submit an application to renew the permit of a Class I or Major Class V well to the Department at least 180 days before the expiration date of the current operation permit.
- 69.4.3.2 The renewal application shall include the following:
- 69.4.3.2.1 An evaluation of the size of the area of review based on actual operation and monitoring data;
- 69.4.3.2.2 Updated area of review information required under subsection 69.2;
- 69.4.3.2.3 A waste stream analysis representative of the fluids which are currently being injected;
- 69.4.3.2.4 The process types or categories which are a source of the fluid being injected;
- 69.4.3.2.5 A satisfactory demonstration of mechanical integrity for the Class I well(s) pursuant to Section 61.0;
- 69.4.3.2.6 Results of groundwater and other monitoring data obtained since the last permit was issued. The permittee shall provide a tabular and graphical presentation of all groundwater monitoring data required by this subparagraph, unless:
- 69.4.3.2.6.1 The monitoring results for a parameter are below detectable limits, or
- 69.4.3.2.6.2 The parameter was not required to be monitored under the current permit;
- 69.4.3.2.6.3 Results of all specific injectivity and pressure fall-off information obtained since the well began operation, or the date of the most recent renewal of the well if all available information were submitted at that time; and
- 69.4.3.2.6.4 Financial responsibility information required by subsection 44.1.7 based on an updated plugging and abandonment plan and cost estimate.
- 69.4.4 The operation of a Class I well shall not be renewed unless the applicant has made the following demonstrations:
- 69.4.4.1 Available water quality monitoring data does not indicate that fluid movement into or between underground sources of drinking water is occurring as a result of injection activity, except as authorized by the Department;
- 69.4.4.2 Mechanical integrity has been demonstrated under Section 61.0;
- 69.4.4.3 Financial responsibility has been demonstrated; and
- 69.4.4.4 Other applicable rules of this chapter have been met.

70.0 Class VI Injection Well Rules

This section is reserved.

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